

Canovision 8

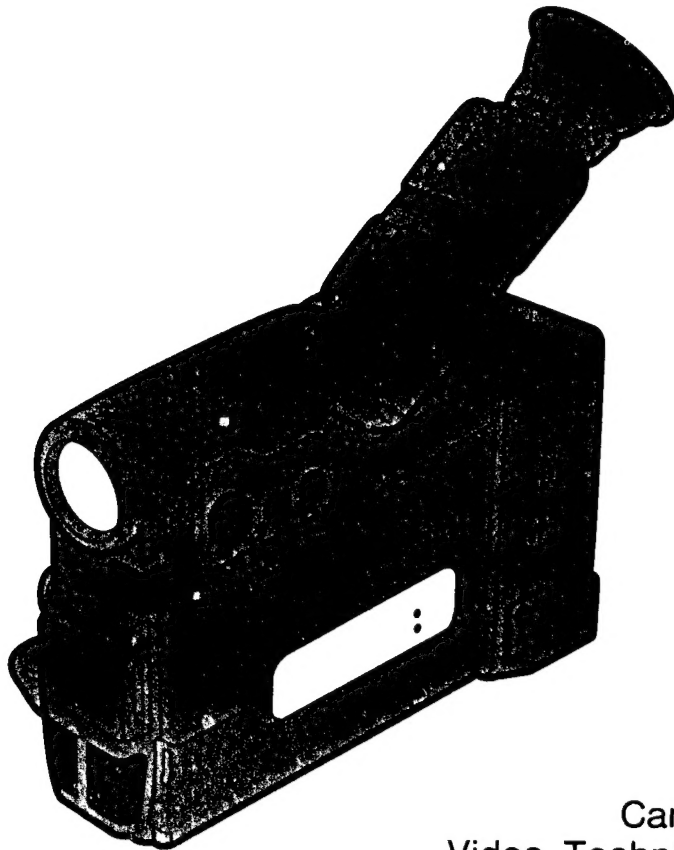
SERVICE MANUAL

UC30HiE

(REF. NO. D15-6430)

8mm Video Camcorder

PAL



DY8-1156-430-000

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Canon Inc.
Video Technical Service Dept.
First Edition: Nov. 1992
Printed in Japan

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine CANON replacement parts.

Especially critical parts in the power circuit block should not be replaced with other makes.

Critical parts are marked with \triangle in the schematic diagrams.

2. The primary source of X-ray radiation in this viewfinder is the picture tube. The tube used in the viewfinder is especially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be same type as the original, CANON approved one.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

5-1 Leakage Current Cold Check

- 1) Unplug the AC cord and connect a jumper between the two prongs on the plug.
- 2) Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1M\Omega$ and $5.2M\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

5-2 Leakage Current Hot Check

- 1) Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
- 2) Connect a $1.5K\Omega$ 10 watt resistor, paralleled by $0.15\mu F$ capacitor, between each exposed metallic parts on the unit and a good earth ground such as a water pipe, as shown in the figure below.
- 3) Use an AC voltmeter, with $1000\Omega/\text{volt}$ or more sensitivity, to measure the potential across the resistor.
- 4) Check all exposed metallic parts of the cover (Cable connection, Handle bracket, metallic cabinet. Screwheads, Metallic overlays, etc), and measure the voltage at each point.
- 5) Reverse the AC plug in the AC outlet and repeat each of the above measurements.
- 6) The potential at any point should not exceed 0.75V RMS.

A leakage current tester (FLUKE MODEL: 8000A equivalent) may be used to make the hot checks.

Leakage current must not exceed 0.5 milliamp.

In case a measurement is out side of the limits specified, there is a possibility of a shock hazard, and corrective action must be taken before returning the instrument to the customer.

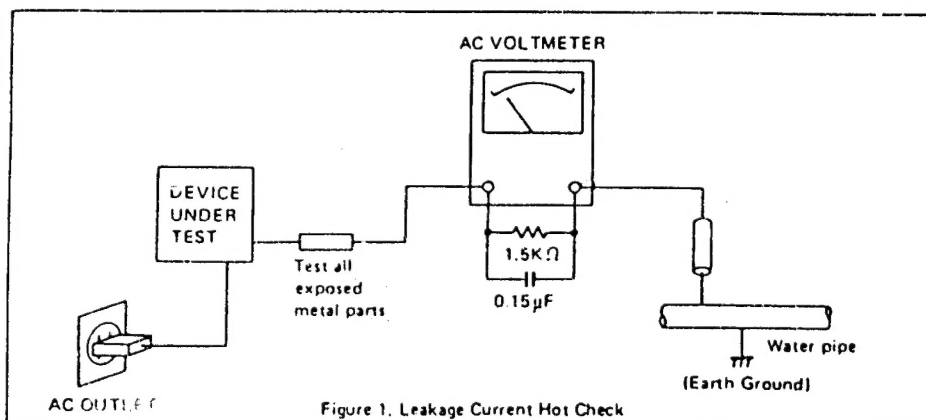


Figure 1. Leakage Current Hot Check

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CHAPTER I. GENERAL DESCRIPTION OF PRODUCT

1. Product Overview

Easy to use, compact and light in weight as Model UC10, the UC30HiE represents more excellent quality in picture (Hi8-recording 470,000-pixel CCD), sound (stereo) and versatility (programmed AE, etc.).

1-1 Major features

1) Superlative picture quality and excellent performance

- ° Inner-focus 8x zoom lens that allows automatic focusing in a range from 10 mm (wide-angle end) to infinity
- ° High-sensitivity, superb-performance 1/3-inch CCD with 470,000 pixels
- ° Auto white balancing on new principle of white extraction through 48 split imaging areas
- ° Programmed automatic exposure
- ° Automatic rangefinding area changeover function for expanding the rangefinding area if the main subject deviates from the center part of screen.
- ° Hi-fi stereo sound effect

2) Versatile functionalities

- ° Quick recording mechanism (just 0.2 second required to start shooting)
- ° Blank search function
- ° Reshooting function
- ° High-speed electronic shutter function (1/120, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/10000 sec)
- ° Variable-speed power zooming (high-speed or low-speed zooming selectable)
- ° Backlight compensation button
- ° Rechargeable lithium battery incorporated

3) Ease of use

- ° Power focusing enabled even in AF mode
- ° Tally lamp/wireless remote controller turn-off function
- ° Dual-trigger mechanism for allowing low-angle shooting with ease
- ° Recorder control buttons hidden under external cover

1-2 Design features of each section

Table I-1 shows the unique design features of each section of this camcorder.

Table I-1

Camera section				Recorder section					
Lens section	AF circuit	CCD	SENSOR and PROCESS circuit	AUDIO circuit	VIDEO circuit	SYSCON circuit	SERVO circuit	Mechanism	Power supply
8x inner-focus zoom lens	Fuzzy-logic TV-AF	1/3-inch CCD with 470,000 pixels	Newly developed (Basically same as in conventional circuit)	Same monophonic audio circuit as in UC1HiE	Third-generation VIDEO IC	Based on UC-10E design	Based on UC-10E design	UC mechanism based on MC-5 design	Based on UC-10E design

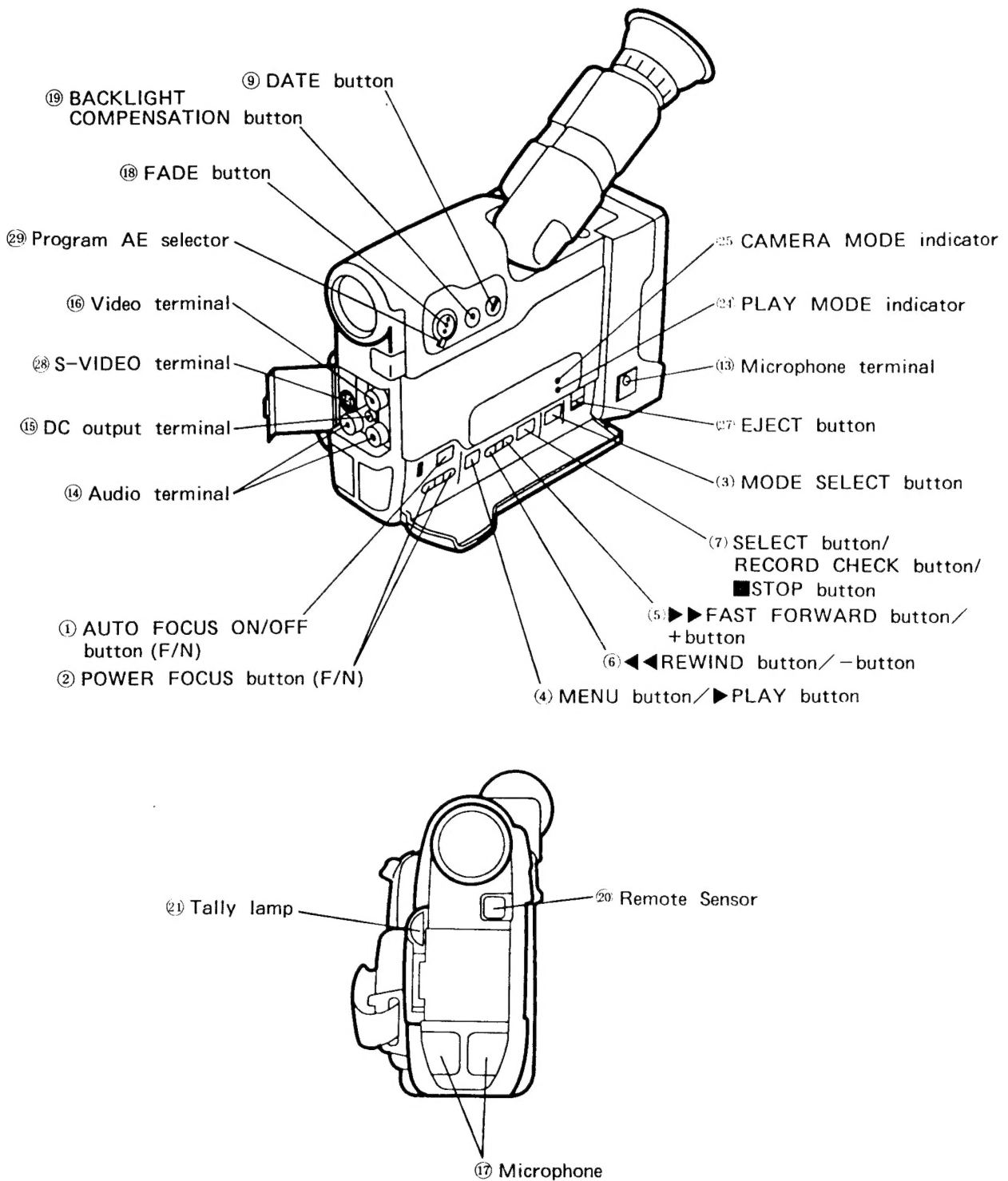


Fig. I-1

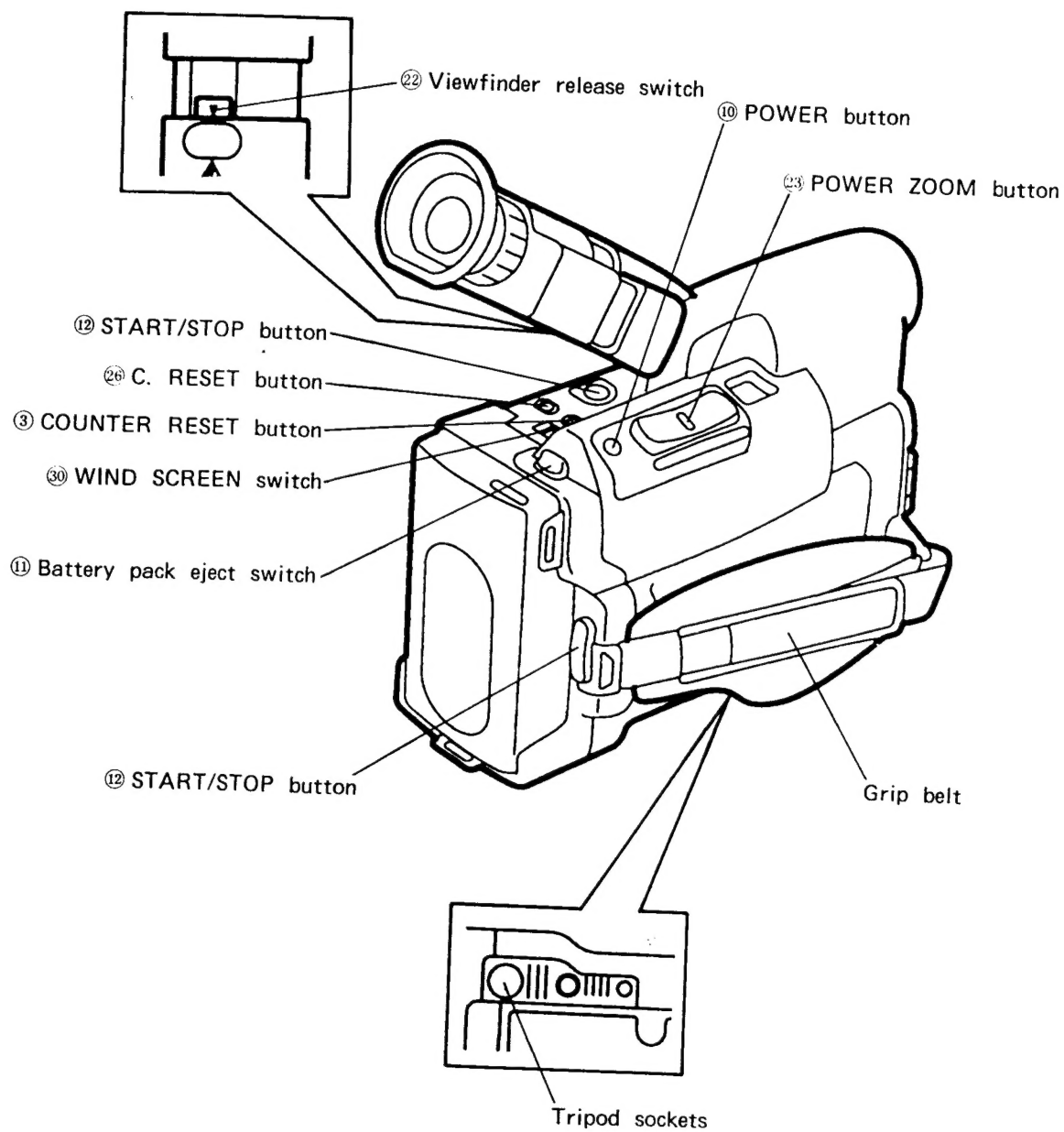


Fig. I-2

1-4 Brief description of control buttons, terminals and external parts

① AUTO FOCUS ON/OFF button

Each press of this button sets the auto focus mode/the power focus (manual focus) mode. When the power focus mode is selected, the "AF OFF" is indicated on the viewfinder screen.

② POWER FOCUS buttons (F/N)

In the auto focus mode, press the AUTO FOCUS ON/OFF button and then F ◀ or N ▶ button (POWER FOCUS button). Thus, the manual focusing can be used.

Clicking the POWER FOCUS button within one second brings the subject into focus slowly; holding it down for more than one second brings the subject into focus promptly. When using the POWER FOCUS button, remember the following instructions:

- ° If the angle of view is changed by zooming after adjusting the focus, the subject goes out of focus in the scene. To avoid this, determine the angle of view first and then focus on the subject.

- ° If the ZOOM button is used during power focusing, the subject goes out of focus.

③ COUNTER RESET button

In other than the fast playback, reverse playback and high-speed search modes, pressing this button resets the linear time counter to zero (0:00:00).

④ MENU button/▶ PLAY button

In CAMERA mode: Functions as MENU button.

Only the basic functions to be used frequently are provided as the buttons on camcorder body for ease of use. Other non-basic functions can be selected from the menus on viewfinder screen using the MENU button.

Each press of the MENU button flips through a total of two menu pages in a cyclic manner as indicated below.



On these two menu pages, the user can select and control the following functions.

MENU 1

MENU 1	
E.ERASE	Reshooting
SHUTTER	High-speed shutter
WB LOCK	White balance lock
B.T.S.	Blank search

MENU 2

MENU 2	
FADE T	Fade trigger
SP/LP	SP/LP selection
TALLY	Tally lamp on/off
SENSOR	Remote sensor on/off

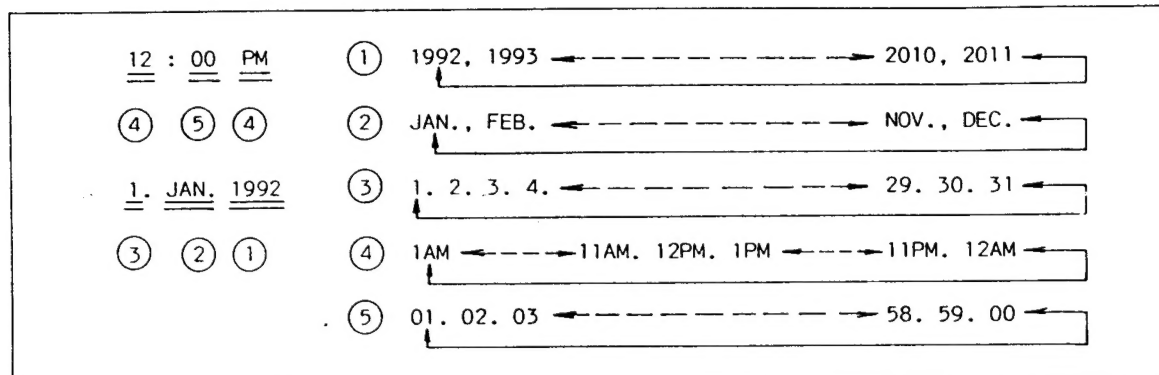
In PLAY mode : Functions as ▶ PLAY button.

Pressing this button starts playback operation.

⑤ ►► FAST FORWARD button/+ button

In CAMERA mode: Functions as + button

- ° In the recording pause state, a forward picture search can be made by holding down this button. Releasing it sets up the recording pause state again.
- ° In auto date setting, 'year', 'month', 'day', 'hours' and 'minutes' can be changed by pressing this button.



- ° In menu item selection, the arrow cursor can be moved forward with this button.

In PLAY mode : Functions as ►► FAST FORWARD button

Pressing this button in the stopped state causes the video tape to be fed fast. And, holding it down in the playback mode reproduces pictures forward rapidly at a speed of 7x fast motion. Also, by holding down this button during fast-forwarding, pictures can be searched forward rapidly at a speed of 11x fast motion at SP and 22x at LP.

⑥ ◀◀ REWIND button/- button

In CAMERA mode: Functions as - button.

- ° In the recording pause state, a backward picture search can be made by holding down this button. Releasing it sets up the recording pause state again.
- ° In auto date setting, 'year', 'month', 'day', 'hours' and 'minutes' can be changed by pressing this button.
- ° In menu item selection, the arrow cursor can be moved backward with this button.

In PLAY mode : Functions as ◀◀ REWIND button.

- ° Pressing this button in the stopped state rewinds the video tape. And, holding it down in the playback mode reproduces pictures in the reverse sequence rapidly at a speed of 5x fast motion. Also, by holding down this button during rewinding, pictures can be searched backward at a speed of 11x fast motion at SP and 22x at LP.

⑦ SELECT button/RECORD CHECK button/■ STOP button

In CAMERA mode: Functions as SELECT button or RECORD CHECK button.

- ° In the recording pause state, pressing this button causes the tape be played back for approx. three seconds so that the user can check the recording on tape. Then, the recording pause state is set up again at the previous position on tape.
- ° If it is desired to reshoot during recording, set up the recording pause state before '*' mark disappears from the viewfinder screen. Press the MENU button (4). Then, while 'E.ERASE' is pointed at with the arrow cursor, press this button. Thus, the tape can be rewound to the start-of-shooting position automatically.
- ° On MENU 1, point at 'SHUTTER' with the arrow cursor using + button (5). Then, with this button, a shutter speed can be selected in a cyclic manner as indicated below.

→ No indication → 1/120 → 1/250 → 1/500 → 1/1000 → 1/2000 → 1/4000 → 1/10000 →

- ° On MENU 1, point at 'WB LOCK' with the arrow cursor using + button (5). Then, the auto white balance function can be locked/unlocked by pressing this button.
- ° On MENU 1, point at 'B.T.S.' with the arrow cursor using + button (5). Then, when this button is pressed, the end-of-recording position on tape is located in fast-motion search (pictures reproduced). The recording pause state is set up automatically at the end-of-recording position.
- ° On MENU 2, point at 'FADE T' with the arrow cursor, and press this button. 'FADE T' will then be indicated at the right on viewfinder screen. In this state, press the FADE button (18) to blink 'T'. Then, when the START/STOP button (29) is pressed to start recording, a picture is faded in. Also, during recording, a picture can be faded out using this button.
- ° On MENU 2, point at 'SP/LP' with the arrow cursor using + button (5). Then, the tape speed (SP/LP) can be selected by pressing this button.
- ° On MENU 2, point at 'TALLY' with the arrow cursor using + button (5). Then, when this button is pressed, 'T OFF' appears at the right on viewfinder screen. In this state, the tally lamp remains off during video shooting. (During receiving the infrared-light signals from remote controller, the lamp is lit up.)
- ° On MENU 2, point at 'SENSOR' with the arrow cursor using + button (5). Then, when this button is pressed, 'S OFF' appears at the right on viewfinder screen. In this state, the remote control sensor remains inactive.
- ° Press the DATE button (9), and change 'year', 'month', 'day', 'hours' and 'minutes' using + button (5) or - button (6). Then, the correct date and time can be set by pressing this button.

In PLAY mode : Functions as ■ STOP button.

Pressing this button causes tape drive to stop.

- ⑧ **MODE SELECT button**
Each press of this button sets the PLAY mode/the CAMERA mode.
The functions of buttons ④, ⑤, ⑥ and ⑦ can be changed with PLAY/CAMERA mode selection using this button.
- ⑨ **DATE button**
° Pressing this button displays the date and/or time on the viewfinder screen as indicated below.

Date/time not displayed (At power-on)	→ 1. JAN. 1992 →	Date/time not displayed	→ 12:00 PM →	Date/time not displayed	→ 12:00 PM 1. JAN. 1992
	(Only date displayed)		(Only time displayed)		(Date and time displayed)

° On the CAMERA mode, the date setting state can be selected by holding this button for approx. five seconds. Then, the exact date and time can be set using + button ⑤, - button ⑥ and SELECT button ⑦.

- ⑩ **POWER button**
Used for turning power on/off.
- ⑪ **Battery pack eject switch**
To take the battery pack out of its box, press this switch.
- ⑫ **START/STOP button**
In CAMERA mode: When this button is pressed in the recording pause state, the recording operation is resumed. Pressing it again causes the camcorder to get back to the recording pause state.

In PLAY mode : When this button is pressed during playback, the picture is made still.
- ⑬ **Microphone terminal**
Used for connecting the optional microphone.
- ⑭ **Audio terminal**
Used for audio output.
- ⑮ **RF unit DC output terminal**
Used for supplying +5 V power to the RF unit RU-100.
- ⑯ **Video terminal**
Used for video output.
- ⑰ **Microphone**
Nondirectional microphone.
- ⑱ **FADE button**
In the CAMERA mode, holding down this button causes the picture and sound to disappear gradually (fade-out). When it is released, they appear gradually (fade-in). White fading can thus be provided. Note that this white-fading function is not interlinked with the START/STOP button.

- (19) BACKLIGHT COMPENSATION button
While this button is held down, compensation can be made for excessive backlight in the scene being videographed.
- (20) Remote sensor
Infrared-light signals from the remote controller are received through this window. The signal-receivable range is approx. 30 degrees on each of the left and right angular sides and approx. 15 degrees on each of the upper and lower angular sides (with respect to the face of remote sensor). The maximum remote-control distance is five meters.
- (21) Tally lamp
The tally lamp flashes during camera recording operation. It lights up steadily when the remote control signal is received.

Camera recording operation ON for 0.5 sec, OFF for 0.5 sec
Remote control signal received ... Lights up steadily.

- (22) Viewfinder release switch
This switch appears when the eyepiece adapter is pulled from the viewfinder until it is stopped. To remove the eyepiece adapter, hold down this switch.
- (23) POWER ZOOM button
With this button, the angle of view (frame) can be changed continuously in a range from wide-angle end to telephoto end.
- (24) PLAY MODE indicator
This green indicator lights up when the PLAY mode is selected. When the voltage level of battery decreases down to the lower limit, moisture condensation takes place or any error occurs in operation, this indicator flashes to provide warning.
- (25) CAMERA MODE indicator
This red indicator lights up when the CAMERA mode is selected. When the voltage level of battery decreases down to the lower limit, moisture condensation takes place or any error occurs in operation, this indicator flashes to provide warning.
- (26) C.RESET button
Pressing this button resets the linear tape counter to 0:00:00. (Loading a cassette resets the counter.)
- (27) EJECT button
In other than the recording mode, pressing this button allows you to take out the cassette tape regardless of whether power is turned on or not.
- (28) S-VIDEO terminal
Used for input/output of the Y/C-separated S-video signal.
- (29) Program AE selector
Selects the program AE mode (3 kinds).
- (30) WIND SCREEN switch
Setting this switch "IN" reduces wind noise.

1-5 Information display on electronic viewfinder

The electronic viewfinder in Model UC30HiE lets the user readily know a repertoire of current statuses and settings. It displays the camera operating status, recorder operating status, warning message, etc. Still more, the user can select the auto date mode, timer setting mode or menu mode at a touch of the button.

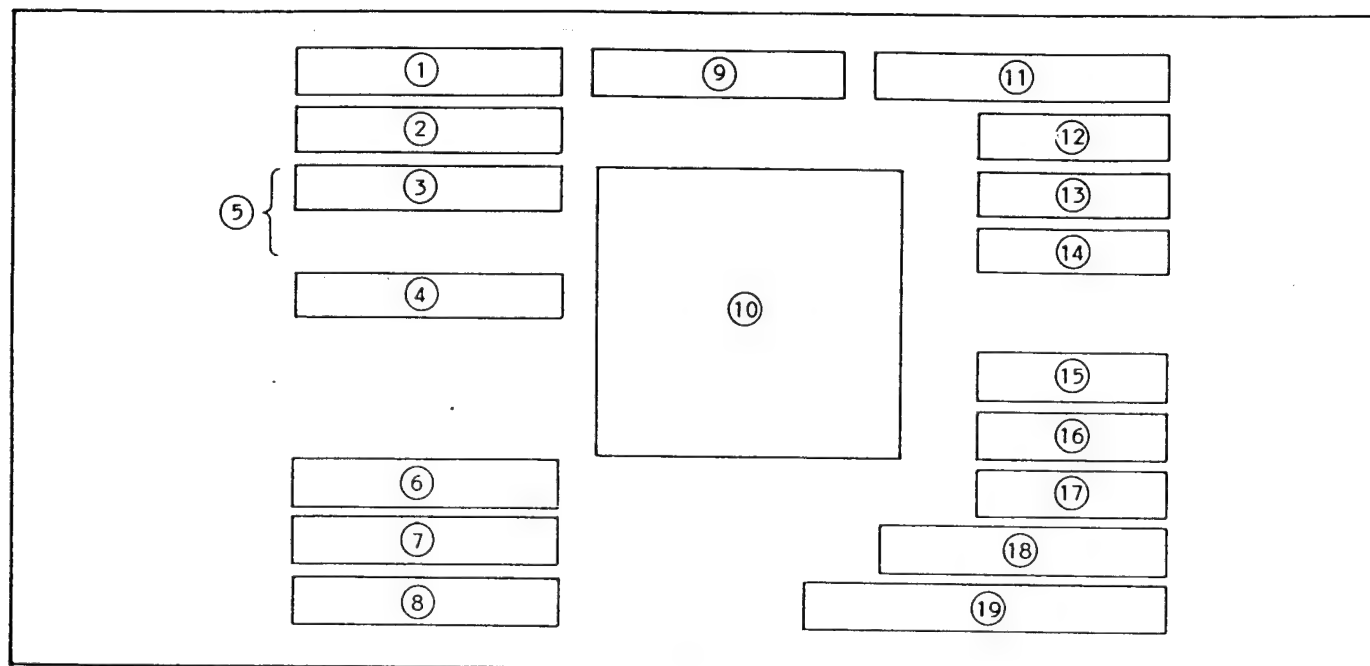


Fig. 1-3

Table I-2 (1/3)

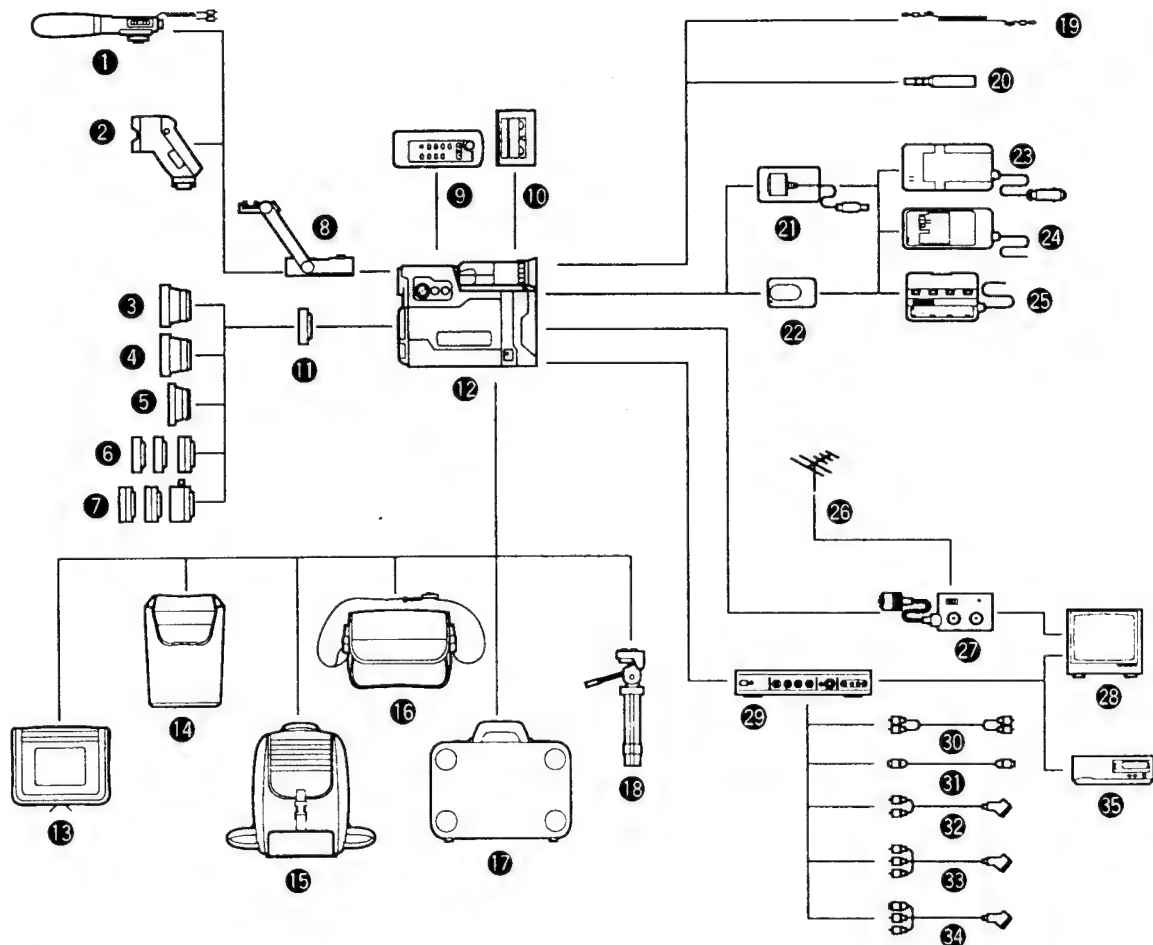
No.	Item	Display	Description
①	AF mode	No indication AF OFF	When the autofocus mode is selected. With selection of power focus mode.
②	White balance mode	No indication WB LOCK	When the full-auto white balance is selected. When the white balance function is locked.
③	High speed shutter mode	No indication 1/120 1/250 1/500 1/1000 1/2000 1/4000 1/10000	With selection of normal shutter speed (1/50 sec.) With selection of shutter speed of 1/120 sec. With selection of shutter speed of 1/250 sec. With selection of shutter speed of 1/500 sec. With selection of shutter speed of 1/1000 sec. With selection of shutter speed of 1/2000 sec. With selection of shutter speed of 1/4000 sec. With selection of shutter speed of 1/10000 sec.
④	Backlight compensation	No indication BLC	No backlight status When backlight is compensated.
⑤	Program AE	No indication PORTRAIT SPOT SAND & SNOW	Auto mode is selected. PORTRAIT mode is selected. SPOTLIGHT mode is selected. SAND & SNOW mode is selected.

Table I-2 (2/3)

No.	Item	Display	Description
⑥	Hi8	Hi8	Hi8 recording mode.
⑦	Tape speed selection	SP LP	Standard play Long play
⑧	Main operation	PAUSE No indication REC PLAY STILL STOP FF RWD EJECT EJECT(Blinking) *	When the recording pause mode is selected. When the search, high-speed fast-forward playback, high-speed rewind playback, or record review function is activated. When the recording operation is selected. When the playback, fast-forward playback or fast rewind playback function is activated. When the still playback function is activated. When the camcorder is stopped. When the videotape is forwarded fast. When the videotape is rewound. When the videotape cassette is ejected. On occurrence of an error. When reshooting is allowed.
⑨	Timer indication	0SEC ~ 10SEC	Counting down for 10 seconds from the moment the recording is indicated.
⑩	MENU display < Menu page 1 >	MENU 1 E.ERASE SHUTTER WB LOCK B.T.S.	Menu page 1 is displayed. For reshooting. For high-speed shutter selection. For white balance lock/unlock For blank search
	< Menu page 2 >	MENU 2 FADE T SP/LP TALLY SENSOR	Menu page 2 is displayed. For fading interlinked with trigger. For selecting tape speed (SP/LP) For turning on/off the tally lamp. For turning on/off the remote sensor.
⑪	Counter value	-9:59:59 ↕ 0:00:00 ↕ 9:59:59	Hours:minutes:seconds
⑫	Tape status	TAPE (Blinking) T. END	When the videotape is not loaded. When the end of videotape is reached in recording.
⑬	Battery status	BATT (Blinking)	When the battery voltage becomes lower than the predetermined level.
⑭	Dew (moisture condensation)	DEW (Blinking)	On occurrence of moisture condensation.
⑮	Fade mode	No indication FADE T ('T' blinking)	Normal fading Fading interlinked with trigger.

Table I-2 (3/3)

No.	Item	Display	Description
①6	Tally lamp mode	No indication T OFF	When the tally lamp function is enabled. When the tally lamp function is disabled.
①7	Remote control mode	No indication S OFF	When the remote control function is turned on. When the remote control function is turned off.
①8	Time	12:00 AM ~ 11:59 PM	The current time is displayed.
①9	Date	1. JAN. 1992 ~ 31. DEC. 2011	The current date is displayed.



- ① MM-200 Stereo Mixing Microphone
- ② VL-20 Battery Video Light
- ③ WD-37 Wide-converter
- ④ WA-37 Wide Attachment
- ⑤ TL-37 Tele-converter
- ⑥ FS-37U Filter Set
- ⑦ FS-37 Filter Set
- ⑧ SA-1 Adapter Bracket
- ⑨ WL-51 Wireless Controller
- ⑩ 8mm Video Cassette
- ⑪ SR-27/37 Step-up Ring
- ⑫ UC30HiE
- ⑬ RS-U2 Rain Shield
- ⑭ SJ-U1 Soft Video Jacket
- ⑮ VK-U1 Video Backpack
- ⑯ SC-U1 Soft Carrying Case
- ⑰ HC-U2 System Case
- ⑱ Tripod
- ⑲ SS-200 Shoulder Strap

- ⑳ WS-20 Wrist Strap
- ㉑ DC-200 DC Coupler
- ㉒ BP-E77K/BP-E722/BP-E722D Battery Pack
- ㉓ CB-110 Car Battery Adapter
- ㉔ CA-200/CA-100 Compact Power Adapter
- ㉕ MC-100 Multi-battery Charger
- ㉖ Aerial
- ㉗ RU-100 RF Unit
- ㉘ TV
- ㉙ RGB-100 RGB Converter (available in U.K. and Continental European countries)
- ⑳ C-150 AV Cable
- ㉑ S-150 S-video Cable
- ㉒ PC-150 SCART Cable
- ㉓ PC-170ST Stereo SCART Cable
- ㉔ PC-270SST S-stereo SCART Cable
- ㉕ VTR

Fig. I-4

2. New Technology

2-1 Camera section

2-1-1 AE system

The UC30HiE adopts the program AE function to enable the videographing beginners to shoot a high-quality picture with ease.

By choosing just a mode out of 1. SPOT LIGHT mode, 2. PORTRAIT mode, 3. SAND & SNOW mode, the best light measuring method, suitable shutter speed, iris and AGC control are set automatically according to the recording subject conditions.

The program AE function for the model UC1HiE controls the iris and AGC with the microcomputer directly, however, this method controls them by adjusting the iris servo loop and AGC servo loop. (This is called as the Simple Program Control Method.)

Consequently, the diagrams of program for the model UC1HiE and UC30HiE are different each other although the idea of methods are the same.

1. Auto exposure mode

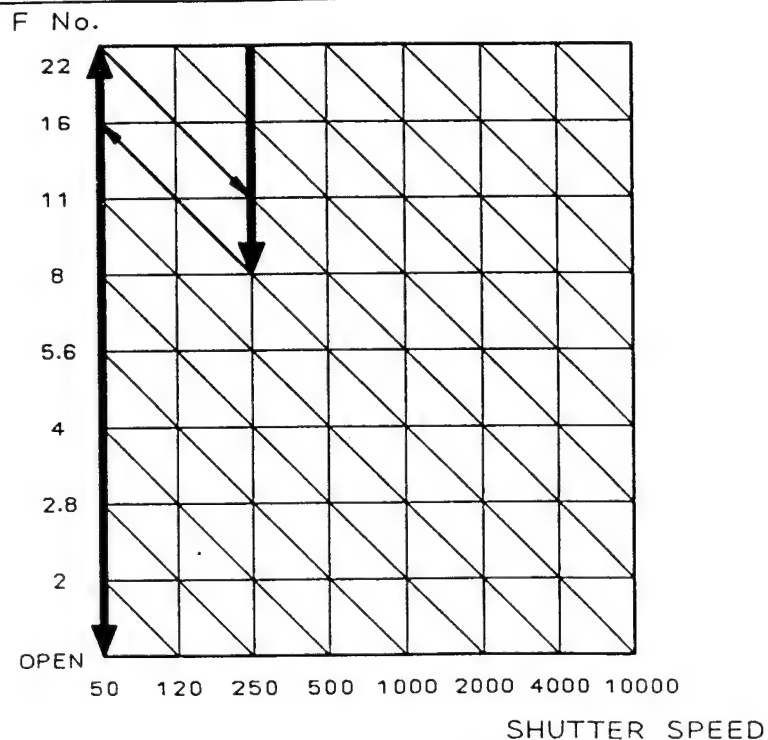


Fig. I-5 Conceptual chart of auto exposure mode

Photometric system : Lower-zone-weighted average metering

Operation : Under high illumination, the shutter speed is automatically adjusted to 1/250 sec.

Effect : To prevent the deterioration in resolution caused by the diffraction of small iris. (The shutter speed is normally set at 1/50 sec.)

IRIS : Fixed

AGC : Fixed

Shutter speed : Automatically switched between 1/50 and 1/250 sec.

Manual shutter : Usable

BLC : Usable

2. Portrait mode

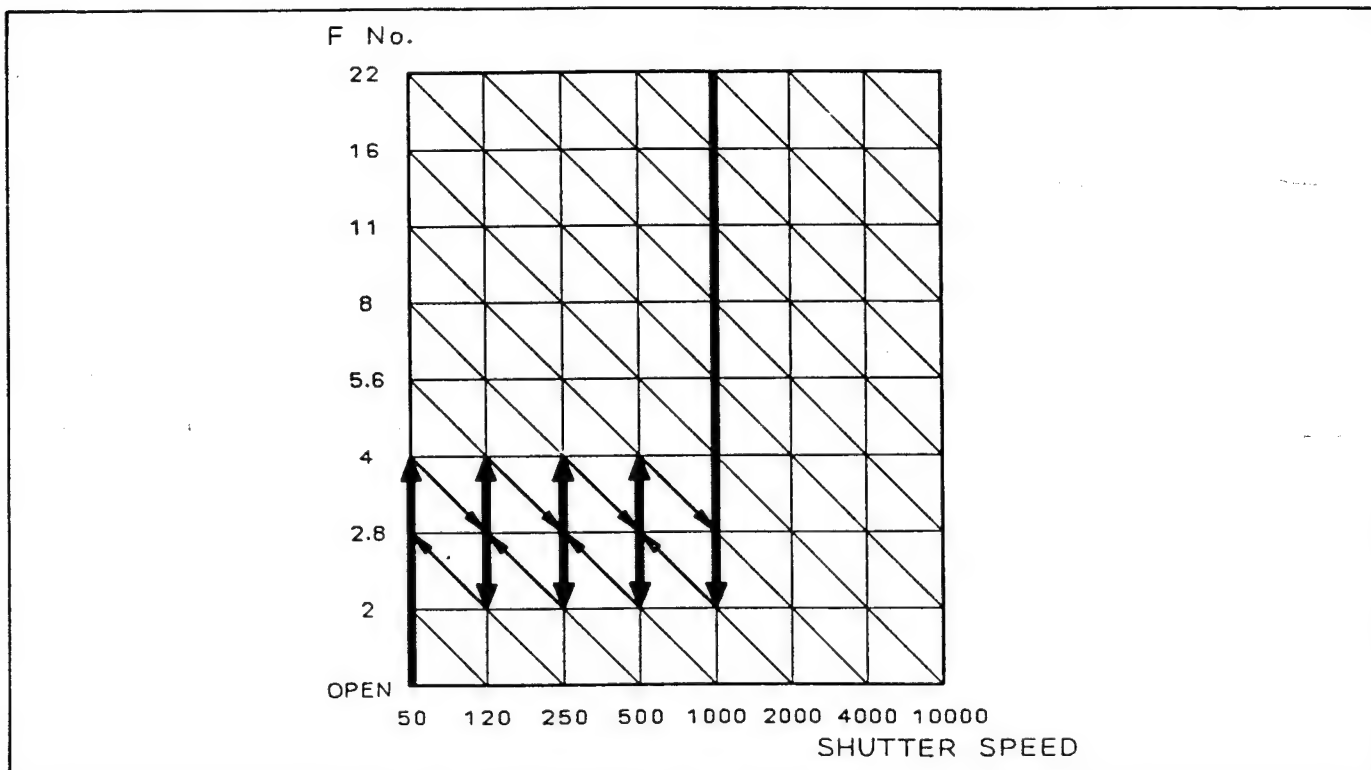


Fig. I-6 Conceptual chart of AE control in portrait mode

Photometric system : Lower-zone-weighted average metering

Operation : According to the exposure level, the shutter speed is automatically adjusted within 1/50 - 1/1000.

Effect : To make a subject vividly, the iris is opened as much as possible.

IRIS : Fixed

AGC : Fixed

Shutter speed : Automatically switched between 1/50 to 1/1000 sec.

Manual shutter : Unusable

BLC : Unusable

3. Sand and snow mode

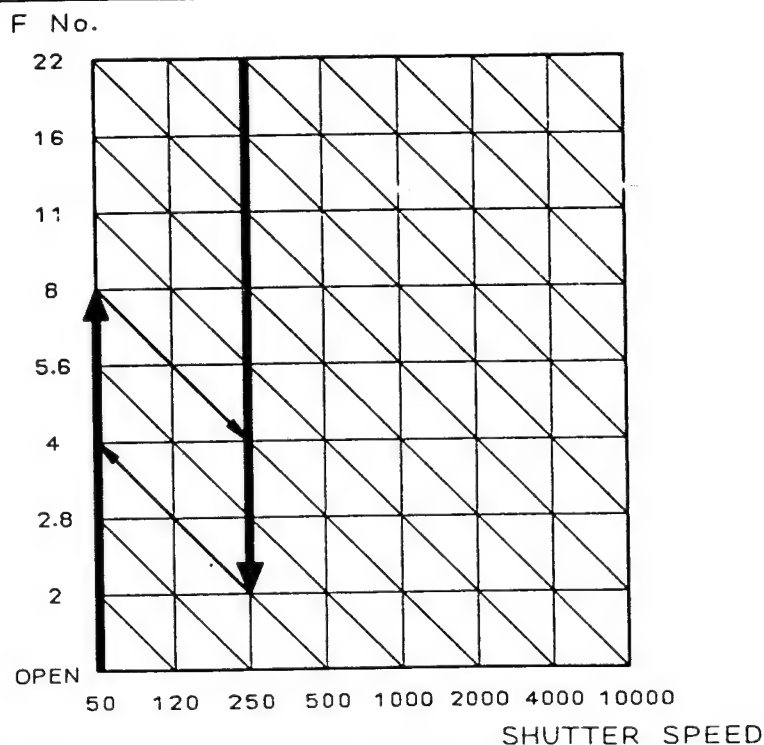


Fig. I-7 Conceptual chart of AE control in sand and snow mode

Photometric system : High luminance-weighted metering

Operation : The luminance average of screen (48-divided) with high luminance is controlled in this mode. Furthermore, under high illumination, the shutter speed is automatically set to 1/250 sec. (If the iris is opened, it is decreased to 1/50 sec.)

Effect : The subject with white background (Ski ground, beach, etc.) can be taken effectively with proper brightness. This mode is programmed to take a quickly moving subject under high illumination of outdoor so that the active resolution and small iris conditions can be upgraded.

IRIS : Adjusted value ~ Upper limit

AGC : Adjusted value ~ Upper limit

Shutter speed : Automatically switched between 1/50 and 1/250 sec.

Manual shutter : Unusable

BLC : Unusable

4. Spotlight mode

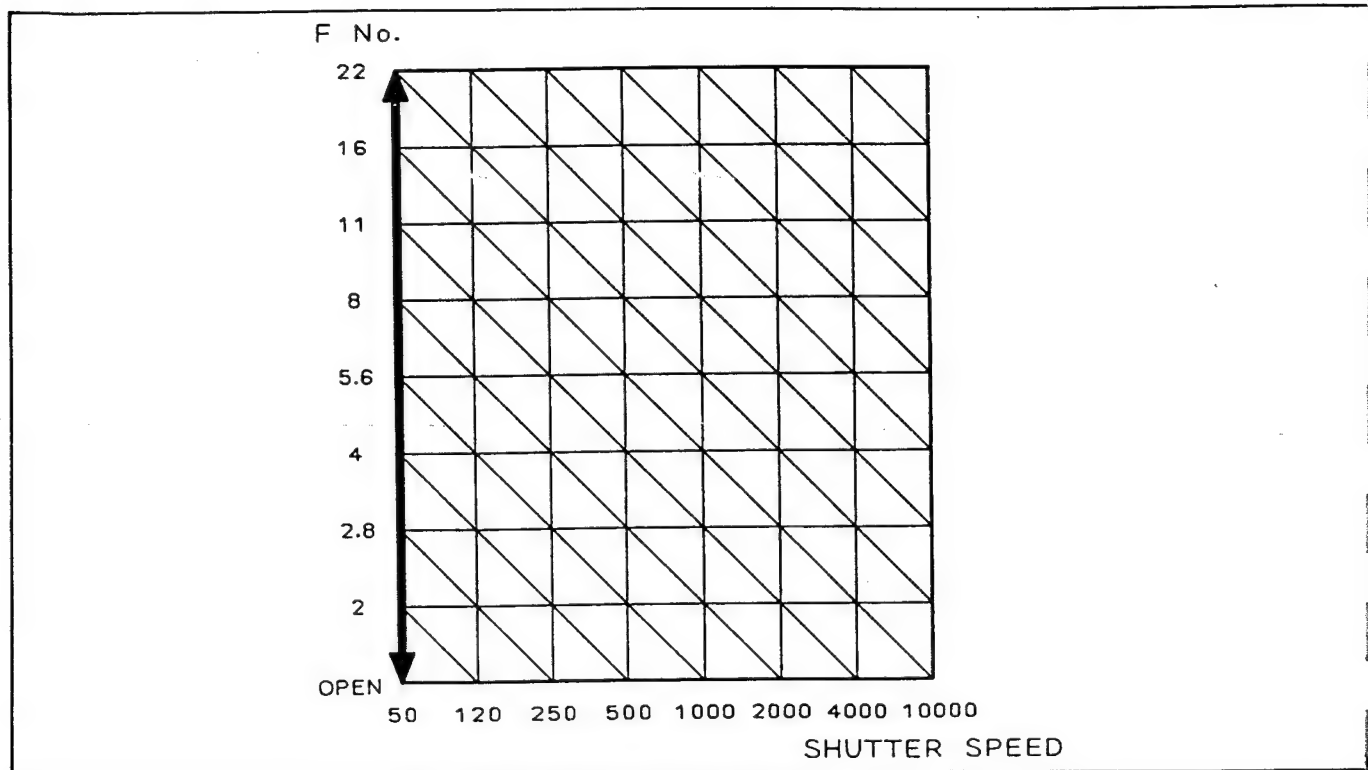


Fig. I-8 Conceptual chart of AE control in spotlight mode

Photometric system : Peak metering

Operation : The area of screen (48-divided) with the highest level is controlled to keep a proper exposure.

Effect : The overexposure can be improved by this mode. (ex. pictures with a strong contrast, comparatively small highlight area, etc.)

IRIS : Lower limit ~ Adjusted value

AGC : Lower limit ~ Adjusted value

Shutter speed : Fixed at 1/50 sec.

Manual shutter : Unusable

BLC : Unusable

3. Circuit Description

3-1 Power supply circuit

3-1-1 Kinds of power sources

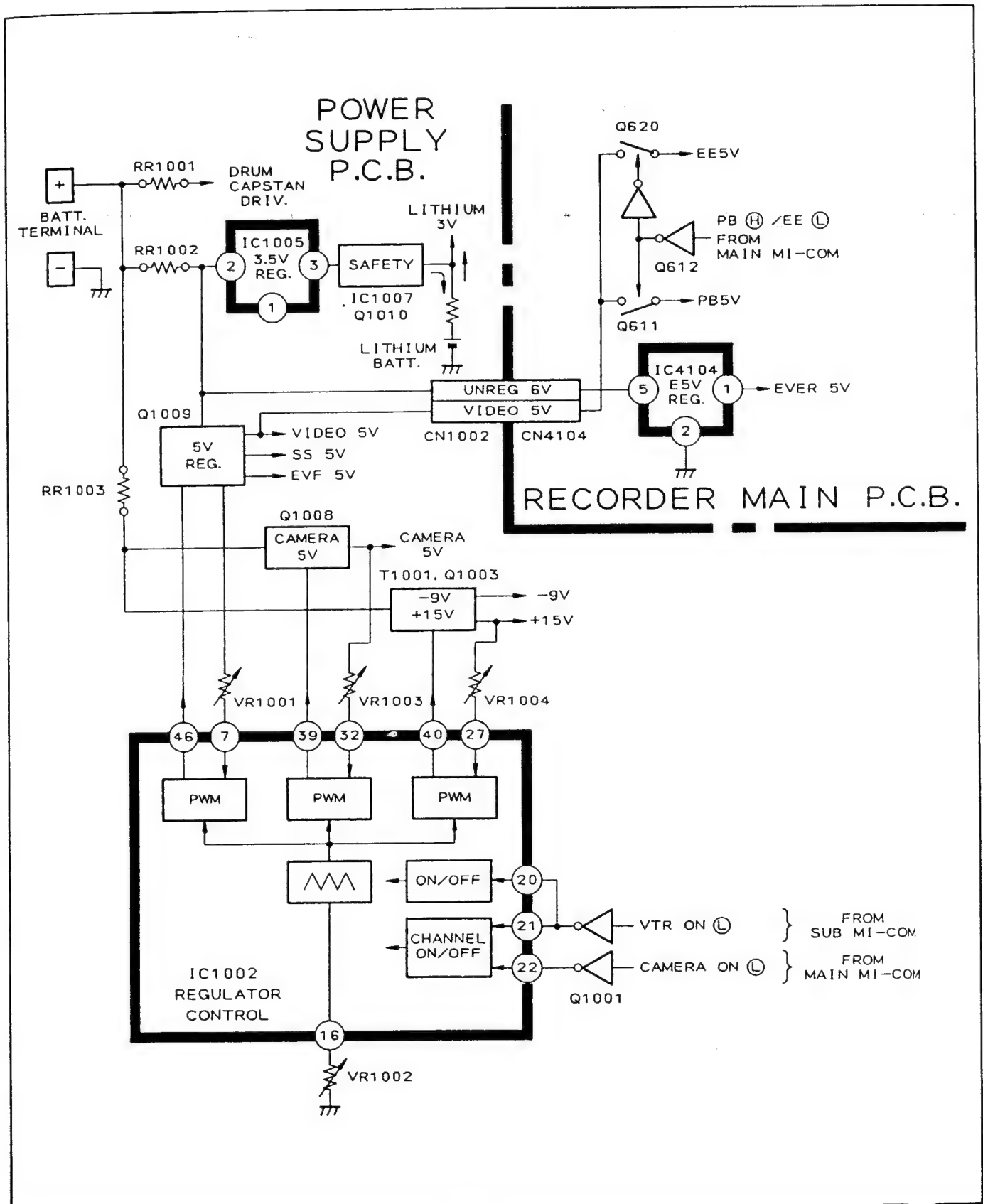


Fig. I-9

(1) EVER 5V

Serves primarily for supplying power to the SUB MI-COM IC4105.

- 1) The battery pack is loaded.
- 2) UNREG 6V is applied from the battery terminal of POWER SUPPLY P.C.B. to pin 5 of IC4104 on RECORDER MAIN P.C.B.
- 3) EVER 5V power is output from pin 1 of IC4104 on VS P.C.B.

(2) SS 5V

Serves as a power source for the MAIN MI-COM IC4102 and SYSCON-SERVO circuit. SS 5V power is always output while the POWER switch is turned on. The output sequence of SS 5V power is as follows:

- 1) The POWER switch is turned on.
- 2) VTR ON (H) is output from pin 31 of SUB MI-COM IC4105.
- 3) VTR ON (L) which is inverted at Q4111 is applied to IC1002 via Q1001 of POWER SUPPLY P.C.B.
- 4) The PWM circuit in IC1002 is driven to deliver the PWM signal from pin 46.
- 5) Q1009 is triggered on to output SS 5V power.

(3) CAMERA 5V

Serves to supply power to the camera and AF circuits. CAMERA 5V power is output when the CAMERA mode is selected. The output sequence of CAMERA 5V power is as follows:

- 1) CAMERA ON (L) is output from pin 38 of MAIN MI-COM IC4102.
- 2) CAMERA ON (L) is applied to IC1002 via Q1001 of POWER SUPPLY P.C.B.
- 3) The PWM circuit in IC1002 is driven to deliver the PWM signal from pin 39.
- 4) Q1008 is triggered on to output CAMERA 5V power.

(4) +15V and -9V

+15V power and -9V power are used to drive the CCD. These power voltages are output when the CAMERA Mode is selected. The output sequence of these power voltages is the same as that of CAMERA 5V.

(5) VIDEO 5V

Serves as a power source for the video and audio circuits. VIDEO 5V power is always output while the POWER switch is turned on. The output sequence of VIDEO 5V power is the same as that of SS 5V.

(6) EE 5V

Serves as a power source for the EE video circuit. EE 5V power is output when the CAMERA mode is selected. The output sequence of EE 5V power is as follows:

- 1) EE (L) is output from pin 9 of MAIN MI-COM IC4102.
- 2) EE (L) is applied via Q612 to trigger on Q620.
- 3) EE 5V power is output from Q620.

(7) PB 5V

Serves as a power source for the PB video circuit. PB 5V power is output when the PLAY mode is selected. The output sequence of PB 5V power is the same as that of EE 5V.

(8) EVF 5V

Serves as a power source for the EVF circuit. EVF 5V power is always output while the POWER switch is turned on. The output sequence of EVF 5V power is the same as that of SS 5V.

(9) LITHIUM 3V

Serves as a backup power source for the quartz circuit. LITHIUM 3V power is supplied when the battery pack is unloaded. While the battery pack is not mounted, the lithium battery outputs 3V power for backing up the quartz circuit. When the battery pack is mounted, the lithium battery is charged with the regulated power from IC1005.

3-1-2 Power-on/off sequence

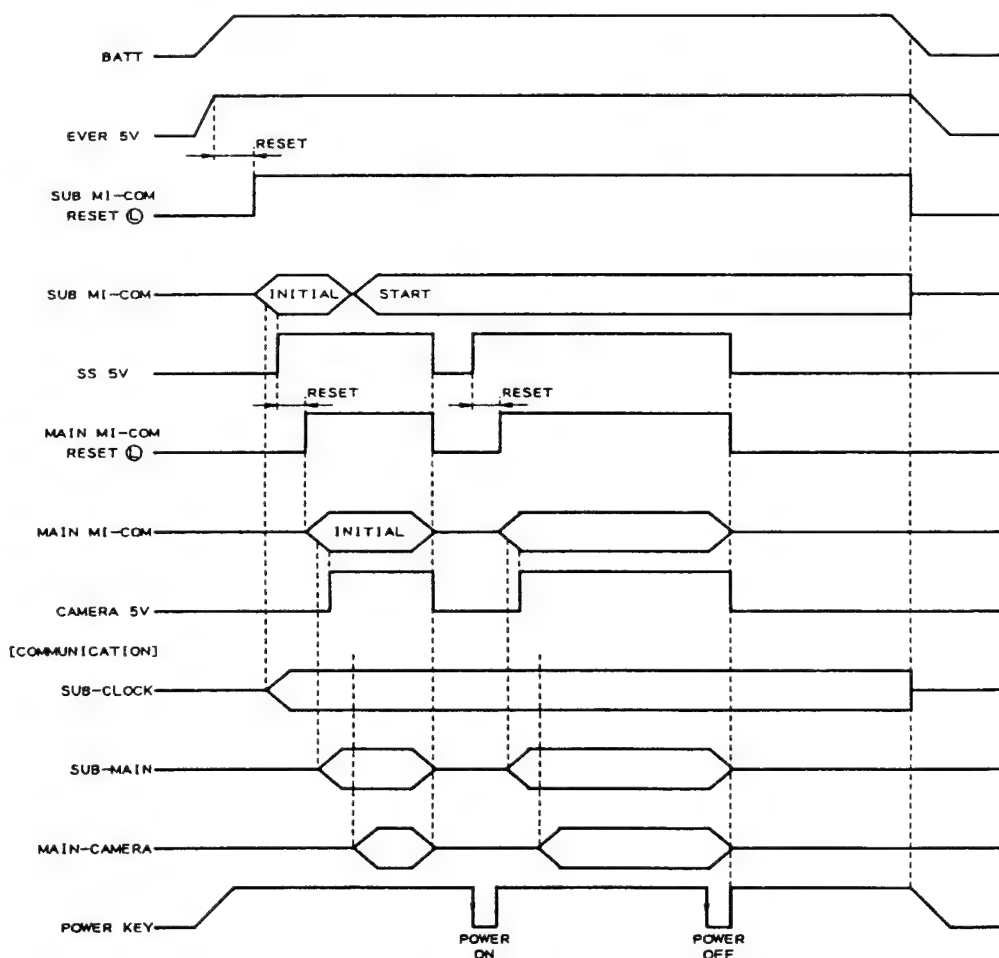
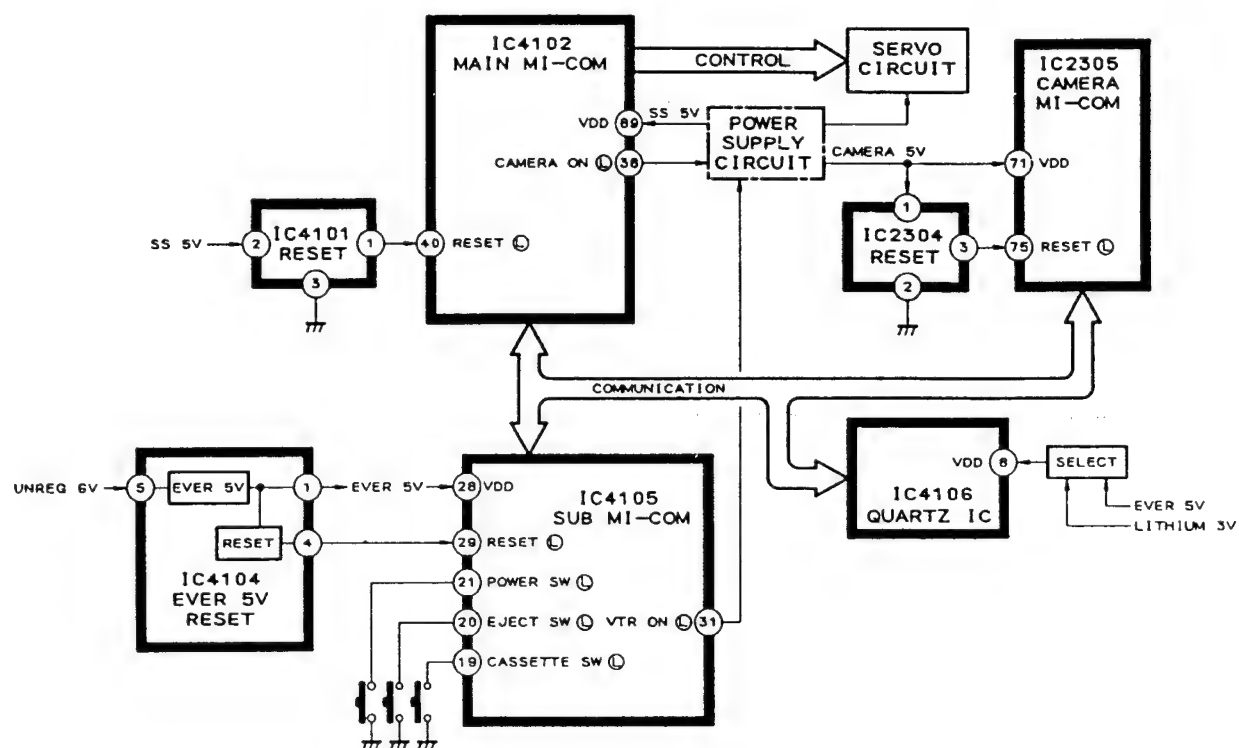


Fig. I-10

(1) At battery mounted

When the battery source is mounted, the circuit operates as follows.

- 1) Battery terminal outputs the UNREG 6V.
- 2) E5V Regulator IC4104 outputs the EVER 5V from the pin 1.
- 3) Power voltage (EVER 5V) is supplied to the sub-microcomputer IC4105.
- 4) Sub-microcomputer IC4105 is reset during "L" period until the output from the pin 4 of Reset IC4105 rises, and then enters the initial operation.
- 5) Sub-microcomputer IC4105 outputs the VTR ON-H from the pin 31 to raise the SS5V for activating the main microcomputer IC4102 and the servo circuit, and starts communication with the Quartz IC4106.
- 6) Main microcomputer IC4102 is reset during "L" period until the output from the pin 1 of Reset IC4101 rises, and then enters the initial operation.
- 7) Main microcomputer IC4102 outputs the CAMERA ON-L signal from the pin 38 to raise the CAMERA 5V for activating the camera microcomputer.
- 8) Main microcomputer IC4102 checks the communication made between the camera and sub-microcomputers and the mechanical status so that it is kept to the proper position.
- 9) Main microcomputer IC4102 terminates the initial operation, and then the sub-microcomputer IC4105 turns off the SS5V.
(Even after this, the sub-microcomputer keeps operation to accept the keys of Power, Eject and Cassette switches.)

(2) At power-on

When the power is turned on, the following operations are performed.

- 1) Pressing of Power key is detected when the pin 21 of sub-microcomputer IC4105 goes "L".
- 2) Sub-microcomputer IC4105 outputs the VTR ON-H from the pin 31 to raise the SS5V for activating the main microcomputer IC4102 and the servo circuit.
- 3) Main microcomputer IC4102 is reset during "L" period until the output from pin 1 of Reset IC4101 rises, and then enters the initial operation.
- 4) Main microcomputer IC4102 outputs the CAMERA ON-L signal from the pin 38 to raise the CAMERA 5V for activating the camera microcomputer.

(3) At ejecting

If the Eject key is pressed with the battery source mounted, the power is turned on even when the power is turned off, and the ejecting operation is performed and then the power is turned off again.

- 1) Pressing of Power key is detected when the pin 21 of sub-microcomputer IC4105 goes "L".
- 2) Sub-microcomputer IC4105 outputs the VTR ON-H from the pin 31 to raise the SS5V for activating the main microcomputer IC4102 and the servo circuit.
- 3) Main microcomputer IC4102 is reset during "L" period until the outputs from the pin 1 of Reset IC4101 rises, and then enters the initial operation.

- 4) Main microcomputer IC4102 controls the mechanism so that the ejecting operation is properly performed.
- 5) Main microcomputer IC4102 terminates the operation control, and then the sub-microcomputer IC4105 turns off the SS5V.
(Even after this, the sub-microcomputer keeps operation to accept the keys of Power, Eject and Cassette switches.)

(4) AT cassette-in

If the cassette tape is loaded with the battery source is mounted, the power is turned on even when the power is turned off, and the loading operation is performed and then the power is turned off again.

The sub-microcomputer IC4105 detects the cassette-in status by "L" at pin 19. (The circuit operation after this detection is made in the same manner as the Ejecting.)

(5) At power-off

When the power is turned off, the following operations are performed.

- 1) Pressing of Power key is detected when the pin 21 of sub-microcomputer IC4105 goes "L".
- 2) Main microcomputer IC4102 sets the mechanical positions to the proper positions. Sub-microcomputer IC4105 turns off the SS5V.
(Even after this, the sub-microcomputer keeps operation to accept the keys of Power, Eject and Cassette switches.)

(6) At power-off (by other than power key)

If the battery source is dismounted during the power-on, the mode of microcomputer is irregular, and the power is turned off. This causes the erroneous recording and/or erasure. To avoid this, when the power voltage drops, the control line of head amplifier is cut off.

- 1) EVER 5V decreases if the UNREG 6V decreases.
- 2) Reset IC4101 outputs "L" signal from the pin 1 when the EVER 5V is dropped to 4.5V.
- 3) REC AMP ON and FLYING ERASE ON signals are broken by the Q4106 and Q4109.

3-2 System control circuit

3-2-1 General

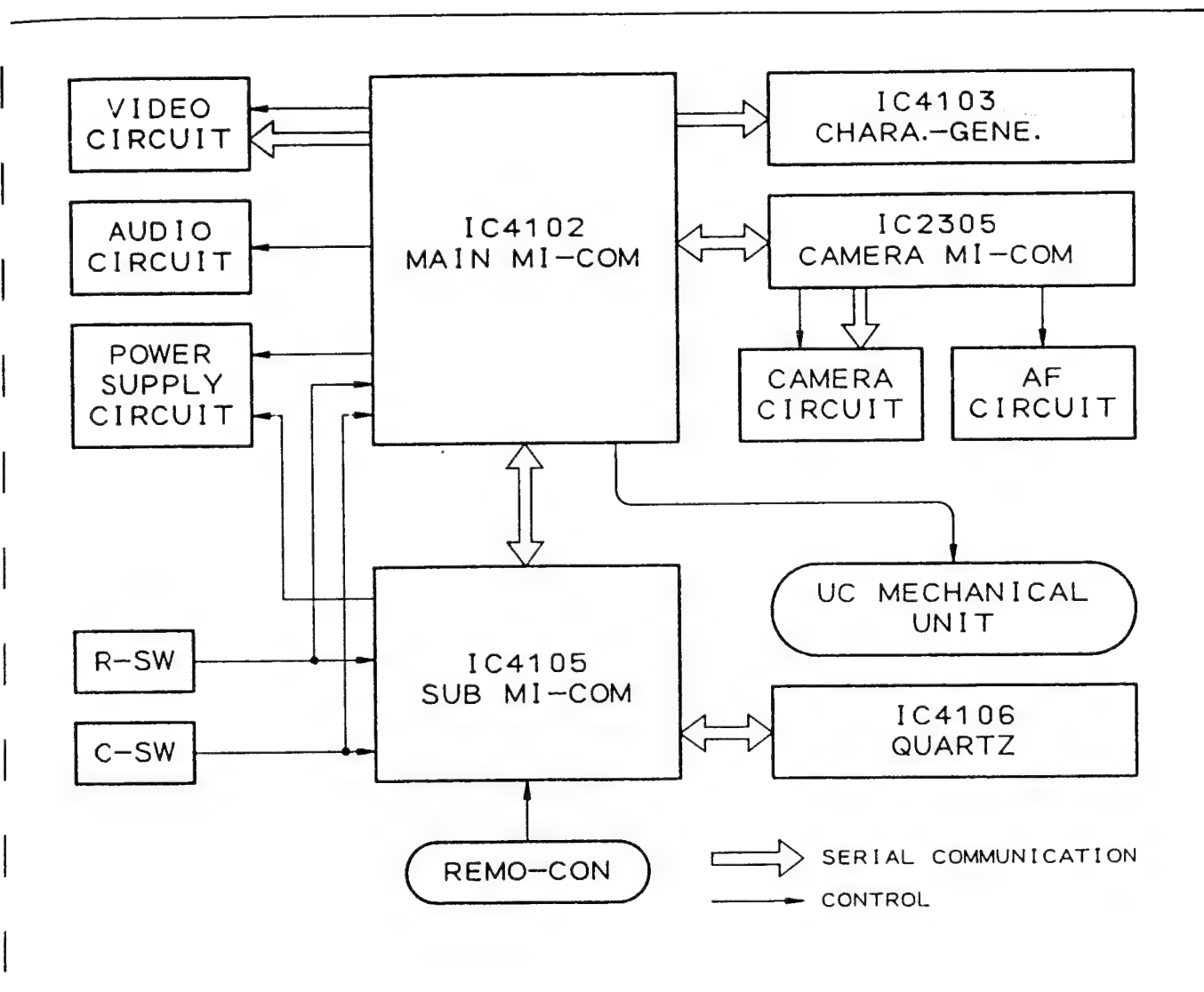


Fig. I-11

System control operations are carried out under control of the MAIN MI-COM IC4102, SUB MI-COM IC4105 and CAMERA MI-COM IC2305.

Listed below are the major control functions of each MI-COM.

< MAIN MI-COM IC4102 >

- ° Mode transition
- ° Power supply circuit control
- ° Recorder signal circuit control
- ° Recorder mechanism unit control
- ° Servo circuit control

< SUB MI-COM IC4105 >

- ° Power supply circuit control
- ° Data writing for CHARA-GENE IC

< CAMERA MI-COM IC2305 >

- ° Camera circuit control
- ° Autofocus circuit control

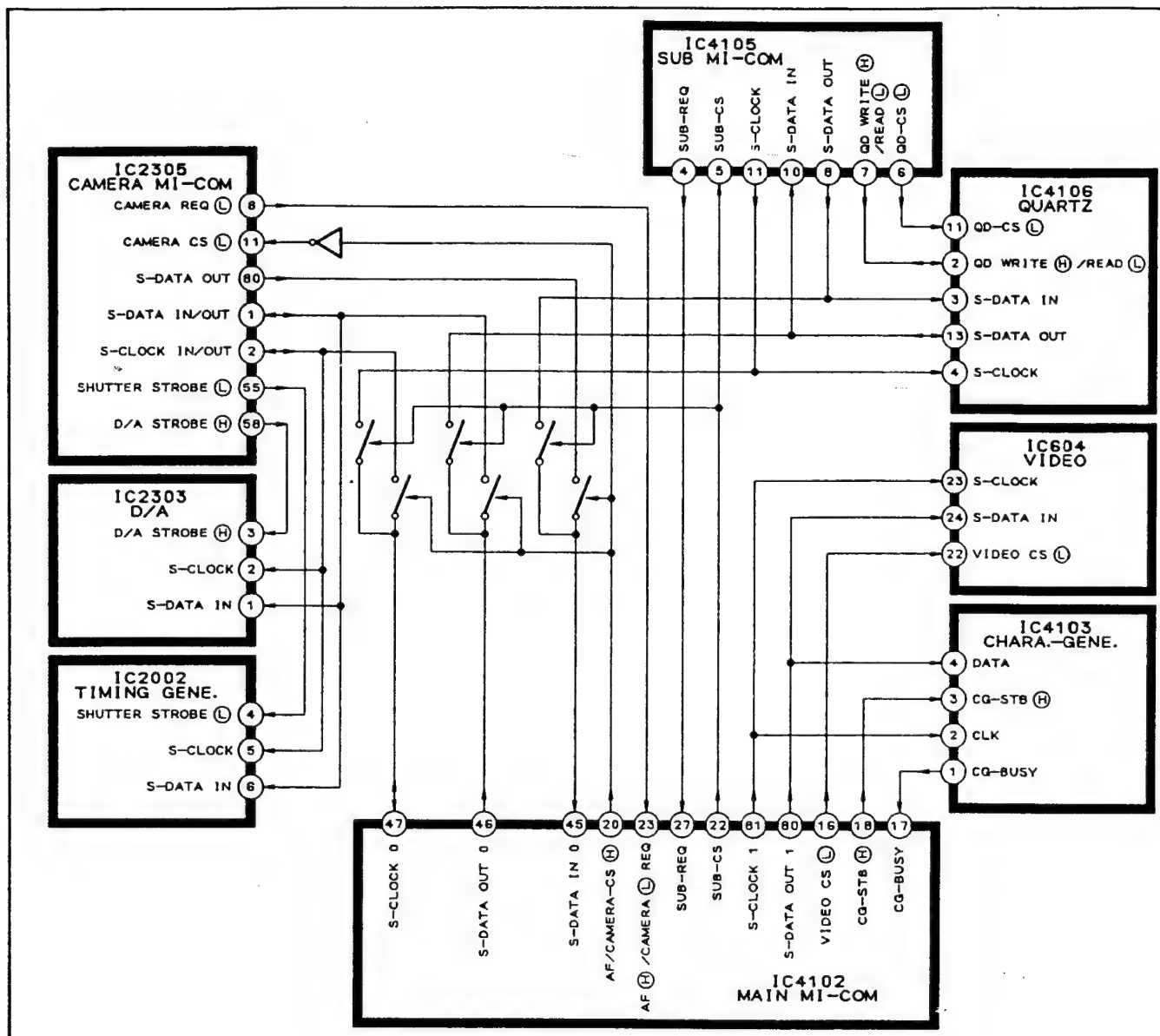


Fig. I-12

Figure I-11 shows the serial data communication circuit. The communication sequences are carried out under the aegis of MAIN MI-COM IC4102. The MAIN MI-COM IC4102 turns on/off the signal lines to each section using the relevant chip select signal.

Communication between the MAIN MI-COM IC and each section is performed with the following timing.

CAMERA MI-COM. IC ... The REQUEST signal is issued by the CAMERA MI-COM IC once during approx. 2V interval.

VIDEO IC Communication is performed once during 1V interval.

QUARTZ IC } Communication is performed while the MAIN MI-COM IC interchanges no signal with
CHARA GENE. IC } any other section.

In addition to the above, the CAMERA MI-COM IC2305 communicates with the D/A converter and timing generator. Once during 1V interval, the CAMER MI-COM IC sends data to the D/A converter and timing generator.

3-2-3 Safety functions

(1) Detection of decrease in main battery voltage

The following three low levels of main battery are detectable during operation.

UNDER CUT 1

When the voltage level of main battery decreases below 5.65 V for more than two seconds, the POWER LED INDICATOR (red or green) blinks and the 'BATT' warning message appears on the viewfinder screen. Under this condition, the key input and operation are not restricted (the normal operation can be continued).

In the circuit sequence, if the UNREG 6V power decreases below the predetermined voltage level, the low-voltage-level detecting signal at pin 14 of SUB MI-COM IC4105 goes 'Low' and the UNDER CUT 1 state is recognized in the microcomputer. Knowing this state through serial communication, the MAIN MI-COM IC changes the CHARA GENE data to indicate the 'BATT' warning on the viewfinder screen. At the same time, the POWER LED indicator is flashed by the LED signal output from pin 1 or 3 of SUB MI-COM IC4105.

UNDER CUT 2

If the UNREG 6V power further decreases below 5.45 V for more than two seconds, the power-off state is taken automatically through the stop state.

In the same manner as for the UNDER CUT 1 condition, the low-voltage-level detecting signal at pin 14 of SUB MI-COM IC4105 goes "Low" and the UNDER CUT 2 state is recognized in the microcomputer.

SHUT-OFF

If the UNREG 6V power drops rapidly to cause EVER 5V to become less than 4.5 V, the RESET IC4104 outputs 'L' signal. This resets the SUB MI-COM IC4105 to shut power off immediately.

(2) Dew condensation

The dew (moisture condensation) detecting function is provided to circumvent jamming of tape due to possible sticking. If moisture condensation is detected during operation, the LED indicator (red or green) blinks for warning. Also, 'DEW' blinks on the viewfinder screen to let the user know detection of moisture condensation. Under this condition, the mechanism is put in the stop state and the tape loading sequence is not carried out even if the tape cassette is inserted. Upon detection of moisture condensation, the one-hour timer of the microcomputer is made active to hold 'DEW' indication unless the power supply is disconnected. Under the 'DEW' condition, the cassette eject function is available for unloading with the drum stopped.

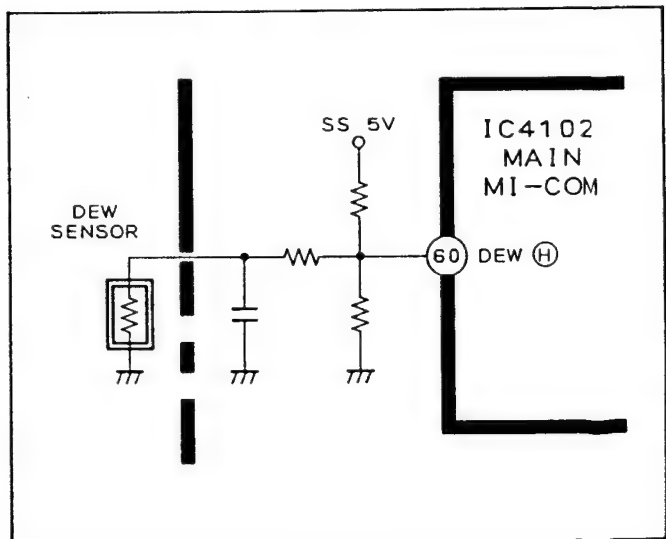


Fig. I-13

In the circuit operation, on occurrence of moisture condensation, the dew sensor equipped on the mechanical chassis increases its resistance to increase the DEW detection voltage applied to pin 60 of MAIN MI-COM IC4102. If the level of this voltage rises above the predetermined value, the MAIN MI-COM IC recognizes moisture condensation and carries out the relevant sequence.

(3) End-of-tape check

If the videotape is run beyond its end, the tape guide may be damaged or the head drum may be squeezed with the tape. To prevent such an event, the end-of-tape check is conducted to detect the end of tape during operation. Upon detection of the end of tape, the tape is stopped immediately.

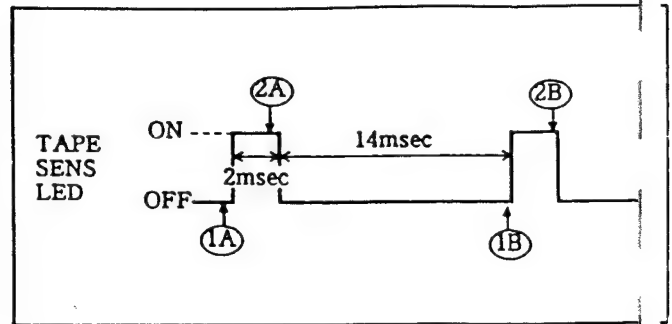


Fig. I-14

The end-of-tape detection LED indicator is turned on/off with the TAPE SENS LED signal appearing at pin 37 of MAIN MI-COM IC4102. In any mode, this LED indicator flashes in a cycle indicated in Fig. I-14. If the signal input across pins 55 and 56 goes 'High' twice in succession, the microcomputer recognizes the end of tape. A read-in of this signal is performed with timing 2A/2B indicated in Fig. I-14. If the 'High' state of signal is found with timing 1A/1B, the microcomputer judges that it is caused by external light. Thus, it cancels detection of the end of tape.

Also, if the EOT and BOT input signals go 'High' twice in succession, the microcomputer judges that the cassette is not loaded. In this case, 'TAPE' blinks on the viewfinder screen.

(4) Pause timer

In the REC PAUSE or STILL mode, the head drum rotates with the tape wound around it. If this condition persists for a certain period of time, the tape may wear or the head may be contaminated. To prevent this, if the REC PAUSE mode is kept for five minutes, it is automatically changed over to the STOP mode and the power is turned off. If the STILL mode is kept for five minutes, it is automatically changed over to the STOP mode with the power being turned on.

(5) Trouble stop (error)

If any trouble occurs in the rotation drive mechanism (drum, capstan, loader, reel), the tape may be jammed or the mechanism may be damaged. To prevent this, the fault control sequence specified for each mode is carried out upon detection of an error. In the event of trouble, the POWER LED indicator flashes and 'EJECT' blinks on the viewfinder screen for warning.

Table I-3

Event	Condition	Detection/Signal
Drum error	1. Error detection state : At start/normal operation 2. FG frequency at normal operation: 225 Hz 3. Error detection level At start : Less than 112.5 Hz At normal operation : Less than 22.5 Hz At emergency : D-PWM on-period ... More than 93% 4. Error detection period At start : 2 sec At normal operation : 0.5 sec At emergency : 100 msec continuously after start-up	Pin 69 of MAIN MI-COM IC4102 (D-FG)
Capstan error	1. Error detection state : At start/normal operation 2. FG frequency at normal operation: 1340 Hz 3. Error detection level At start : Less than 268 Hz At normal operation : Less than 54 Hz 4. Error detection period : 2 sec	Pin 70 of MAIN MI-COM IC4102 (C-FG)
Reel error	1. Error detection mode : At normal operation 2. Error detection : More than 2048 C-FG pulses in half cycle of takeup/supply reel FG sequence (Only on the side of takeup reel)	Pins 57 and 58 of MAIN MI-COM IC4102 (S/T-REEL FG) Pin 70 of MAIN MI-COM IC4102 (C-FG)
Loading error	1. Error detection state : At mode transition 2. Error detection : Proper positioning not accomplished within a predetermined period of time EJECT UNLOAD ... 2 sec UNLOAD STOP ... 5 sec STOP PINCH ON ... 2 sec	Pins 16, 17 and 18 of MAIN MI-COM IC4102 (MODE SW)

Table I-4

(Processing after error detection)

	CASSETTE-IN	LOADING in progress	UNLOADING in progress	TAPE RUNNING	MODE TRANSITION in progress
Drum error	POP-UP	POP-UP	POP-UP	ERROR STOP 1	ERROR STOP 1
Capstan error	ERROR STOP 2	ERROR STOP 2	ERROR STOP 3	ERROR STOP 1	ERROR STOP 1
Reel error	-	-	ERROR STOP 3	ERROR STOP 1	ERROR STOP 1
Loading error	POP-UP	POP-UP	ERROR STOP 1	-	ERROR STOP 1

- ° POP-UP : Eject due to dew → Eject due to dew → POP-UP → Error clear
- ° ERROR STOP 1 : Stop position (Error indication is cleared when the cassette tape is ejected or the POWER key is turned off/on.) → Error indication
- ° ERROR STOP 2 : Stops at arbitrary position → (Error indication is cleared when the cassette tape is ejected or the POWER KEY is turned on/off)
- ° ERROR STOP 3 : Stop position

* Note: In this camcorder, any error indication can be cleared by turning off/on the POWER key in addition to the above sequences.

3-3 Pin function of recorder ICs

3-3-1 Main microcomputer IC4102

Table I-5 (1/2)

Pin No.	Signal	I/O	Function
1	SEL1	-	Not used.
2	REC AMP ON (H)	0	Controls recording.
3	FE ON (H)	0	Goes "H" at flying erase head turned on.
4	DRUM ON (H)	0	Goes "H" at drum motor turned on.
5	DRUM BREAK	0	Controls braking of drum motor. "H" for brake.
6	PB (H)/REC (L)	0	Switches PB/REC mode.
7	DRUM REF.	0	Checks drum motor control.
8	CAMERA (H)/LINE (L)	0	Switches Camera/Line.
9	PB (H)/EE (L)	0	Switches PB/EE mode.
10	SP (H)/LP (L)	0	Switches SP/LP mode.
11	JOG (H)	0	Goes "H" for special playback.
12	VIDEO MUTE	0	Video muting. "H" for mute.
13	CAPSTAN ON	0	Goes "H" at capstan motor turned on.
14	CAPSTAN FWD (H)/REV (L)	0	Controls rotation direction of Capstan motor. "H" for clockwise. "L" for counterclockwise.
15	DISPLAY (H)	0	Controls mode indication on screen. "H" on screen.
16	VIDEO-CS	0	Communication terminal for video IC serial data. (Chip select)
17	CG-BUSY	I	Serial data communication terminal for Character Generator IC.
18	CG-STROBE	0	
19	LOADING CONT. (H)	0	Controls loading limiter.
20	AF/CAMERA-CS (H)	0	Chip select for Camera/AF.
21	JITTER ERROR MIX (H)	0	Jitter compensation.
22	SUB-CS (H)	0	Chip select for sub-microcomputer.
23	AF (H)/CAMERA (L) REQUEST	I	Communication request with Camera/AF.
24	HiMP (L)	I	Detects HiMP tape.
25	MP (H)/ME (L)	I	Detects ME/MP tape.
26	REC PROOF (L)	I	Controls SW for recording stop. "H" for stop.
27	SUB-REQUEST	I	Communication request with sub-microcomputer.
28	MODE SW 1	I	Detects mechanical status (position).
29	MODE SW 2	I	
30	MODE SW 3	I	
31	AUDIO MUTE (H)	0	Audio muting. "H" for mute.
32	ATF CONT.	0	Controls ATF pre-amplifier gain.
33	GND	-	-
34	GND	-	-
35	GND	-	-
36	GND	-	-
37	TAPE LED (L)	0	Controls light emission of tape sensor LED.
38	CAMERA ON (L)	0	Controls camera power supply. "L" for ON.
39	GND	-	-
40	RESET (L)	I	Resets CPU. "L" for reset.
41	GND	-	-
42	X'TAL IN	I	X'TAL IN
43	X'TAL OUT	0	X'TAL OUT
44	GND	-	-
45	S-DATA IN 0	I	Serial data communication.
46	S-DATA OUT 0	0	
47	S-CLOCK 0	0	
48	ZOOM KEY	I	Detects Zoom Tele/Wide.
49	AE KEY	I	Detects AE SW.
50	F-CH (L)	I	Not used.

Table I-5 (2/2)

Pin No.	Signal	I/O	Function
51	GND	-	-
52	GND	-	-
53	V REF	-	A/D reference.
54	VDD	-	Analog power.
55	EOT SENS. (H)	I	Detects tape end. "H" for end.
56	BOT SENS. (H)	I	Detects tape top. "H" for top.
57	S REEL SENS	I	Detects supply reel FG.
58	T REEL SENS	I	Detects take-up reel FG.
59	GND	-	-
60	DEW (H)	I	Detects dew condensation.
61	SW POINT	I	Sets switching point.
62	ATF ERROR	I	Input of ATF error voltage.
63	Hi8 DET (H)	I	Detects Hi8 mode.
64	SP/LP DET	I	Detects SP/LP mode. "H" for SP, "L" for LP.
65	C LOG (H)	I	Detects unrecorded portion of tape. "H" at detected.
66	C-SYNC	I	Input of composite sync. signal.
67	RF SWITCHING PULSE	I	Head switching pulse.
68	DRUM PG	I	Input of drum motor PG signal.
69	DRUM FG	I	Input of drum motor FG signal.
70	CAPSTAN FG	I	Input of capstan motor FG signal.
71	NC	-	-
72	NC	-	-
73	LOAD (H)	O	Loading command. "H" for loading.
74	UNLOAD (H)	O	Unloading command. "H" for unloading.
75	CAPSTAN PWM	O	PWM output of capstan error signal.
76	DRUM PWM	O	PWM output of drum error signal.
77	ACK	I	Input of detection signal for automatic chrominance killer.
78	CAPSTAN FG	I	Input of capstan FG signal.
79	COMP. IN	I	Detects composite.
80	S-DATA OUT 1	O	Serial data communication.
81	S-CLOCK 1	O	
82	Hi8 (H)/NORMAL (L)	O	Controls Hi8/Normal.
83	HiMP (L)	O	Controls HiMP.
84	MP (H)/ME (L)	O	Controls ME/MP.
85	ATF REF.	O	ATF reference signal.
86	S DET (H)	I	Detects S input.
87	LOADING SENS.	I	Loading motor sensor.
88	GND	-	-
89	VDD	-	Power supply.
90	-	-	-
91	CH-4 SW	O	Crosstalk protection for other heads. "H" for mute.
92	CH-3 SW	O	
93	CH-2 SW	O	
94	CH-1 SW	O	
95	V MASK	O	Jitter compensation.
96	JOG VD	O	Outputs pseudo-V pulse.
97	1/2 SW PULSE	O	Outputs 1/2-frequency switching pulse.
98	SW PULSE	O	Outputs switching pulse.
99	ATF SW	O	Switches fH/3fH of ATF. "L" for f1 and f3. "H" for f2 and f4.
100	SEL2	-	Not used.

Table I-6

Pin No.	Signal	I/O	Function
1	R LED (H)	0	"H" for Camera mode.
2	C LED (H)	0	"H" for Playback mode.
3	TALLY (H)	0	Controls light emission of tally LED.
4	SUB-REQ	0	Serial data communication.
5	SUB-CS	I	
6	QD-CS (L)	0	Serial data communication.
7	QD WRITE (H) / READ (L)		
8	S-DATA OUT	0	Serial data communication.
9	NC	-	-
10	S-DATA IN	I	Serial data communication.
11	S-CLOCK	0	
12	VSS	-	Connected with ground.
13	V REF	-	Power supply.
14	BATT	I	Detects insufficient power voltage.
15	KEY 1	I	Detects kinds of key pressed.
16	NC	-	-
17	KEY 2	I	Detects key.
18	KEY +/-		
19	CASSETTE IN (L)	I	Detects garage-down switch status. "L" at detected.
20	EJECT SW (L)	I	Detects eject switch status. "L" at detected.
21	POWER SW (L)	I	Detects power switch status. "L" at detected.
22	TRIGGER SW (L)	I	Detects trigger switch status. "L" at detected.
23	NC	-	-
24	REMO-CON DATA	I	Inputs data from wireless remote controller.
25	NC	-	-
26	X'TAL OUT	0	X'TAL connection.
27	X'TAL IN	I	
28	VDD	-	Power supply.
29	RESET (L)	I	Reset terminal. "L" for reset.
30	VDD	-	Power supply.
31	VTR ON (H)	0	Controls power supply for recorder section. "H" at ON.
32	NC	-	-

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CHAPTER II. DISASSEMBLING/ADJUSTMENTS

1. Before Disassembling/Adjustments

1-1 Maintenance tools and supplies

1-1-1 List of maintenance tools and supplies

Table II-1

Maintenance tools

DESCRIPTION	TOOL NO.	REMARKS
Alignment tape (V sweep)	DY9-1111-500	
Alignment tape (stereo)	DY9-1291-000	
Extension cable	DY9-1261-000	
Extension cable	DY9-1283-000	New
Extension cable	DY9-1284-000	New
Extension cable	DY9-1285-000	New
Extension cable	DY9-1288-000	New
Y/C separator	DY9-1093-000	
Color bar chart	DY9-2002-000	
Gray scale chart	DY9-2005-000	
Adjusting screwdriver (2.6 mm)	DY9-2021-000	
Phillips screwdriver (2 bits only)	DY9-2030-000	
Adjusting screwdriver (1.8 mm)	DY9-2041-000	
Color chart viewer (5600°K)	DY9-2039-100-100	
View lamp (5600°K)	DY9-2040-000	
CCA 12 filter $\phi 46$	DY9-2046-000	

Table II-2

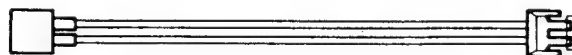
Supplies

DESCRIPTION	TOOL NO.	REMARKS
Grease GE-X8	CY9-8044-000	
Teflon Fluorocarbon Resin MP-102	DY9-3013-000	
Dia Bond 1663	DY9-3008-000	
Floil G-474B	DY9-3024-000	
Grease LT-SH	CY9-8033-000	
Floil G902	DY9-3017-000	
Grease GE-C9	CY9-8043-000	

* Note: For recorder mechanism, refer to the mechanism manual for the UC mechanical chassis (DY8-3391-504-201) separately issued.

1-1-2 List of extension cables (Fig. II-1)

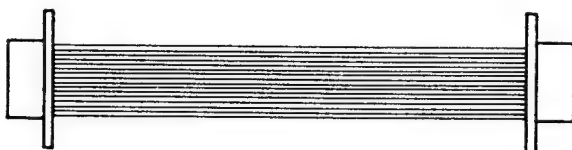
DY9-1261-000
(2-PIN)
POWER SUPPLY P.C.B. CN1001
↑
MODE MOTOR



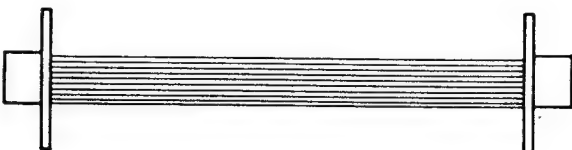
DY9-1283-000
(28-PIN)
RECORDER MAIN P.C.B. CN4104
↑
POWER SUPPLY P.C.B. CN1002



DY9-1284-000
(16-PIN)
RECORDER MAIN P.C.B. CN4103
↑
CAMERA MAIN P.C.B. CN2202



DY9-1285-000
(10-PIN)
RECORDER MAIN P.C.B. CN4108
↑
CAMERA MAIN P.C.B. CN2201



DY9-1288-000
(3-PIN)
RECORDER MAIN P.C.B. CN4108
↑
Y/C SEPARATOR



Fig. II-1

Disassembling

2-1 Cover disassembling

2-1-1 Removal of LS cover and cassette cover (Fig. II-2)

- (1) Loosen two screws (a), and remove the LS cover.
- (2) Set the EJECT state.
- (3) Loosen two screws (b), and open the cassette cover.
- (4) Loosen one screw (c), remove the flexible cable clamp plate, and detach the flexible cable from the connector.

* Note: In reassembling, push in the flexible cable toward the cassette cover side after mounting the flexible cable clamp plate.

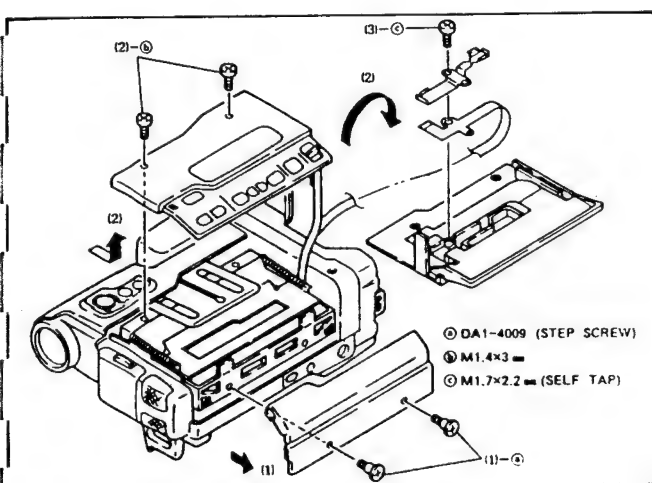


Fig. II-2

2-1-2 Removal of rear cover (1) and rear cover (2) (Fig. II-3)

- (1) Turn up the electronic viewfinder.
- (2) Loosen five screws (d) and three screws (e).
- (3) Remove the rear cover (1) and rear cover (2).

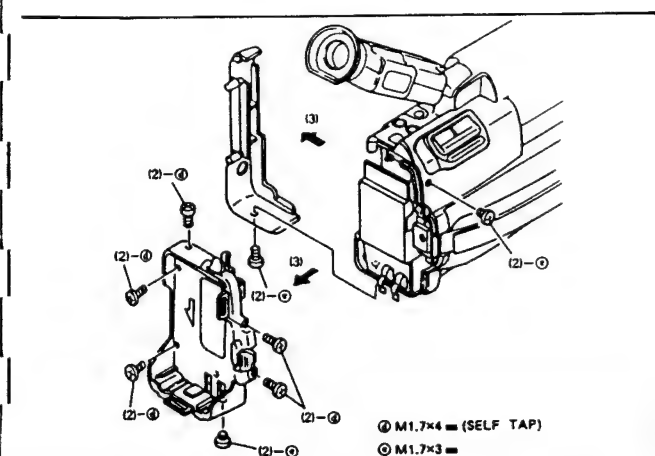


Fig. II-3

2-1-3 Removal of left cover (Fig. II-4)

- (1) Remove the START/STOP switch by pressing its retaining tab.
- (2) Loosen two screws (d) and two screws (g).
- (3) Remove the left cover.

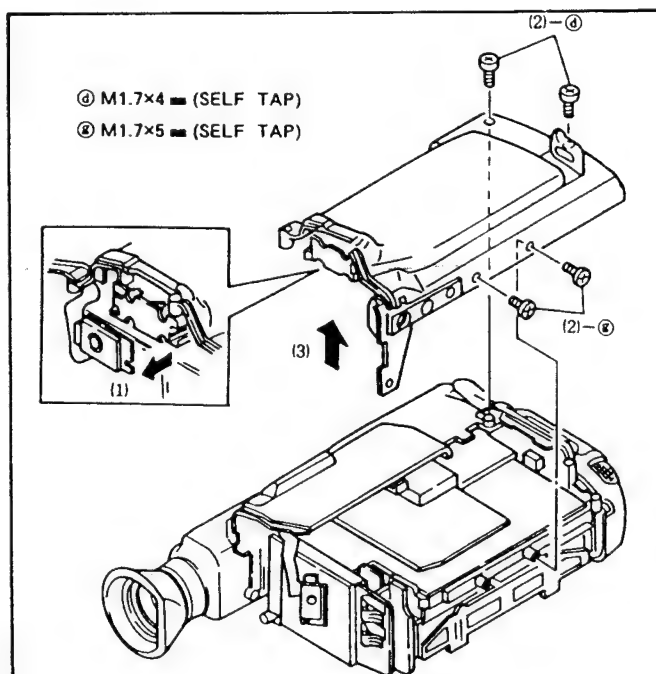


Fig. II-4

2-1-4 Removal of top cover (Fig. II-5)

- (1) Remove one screw (d) and one screw (g).
- (2) Unplug connectors CN600 and CN4105.
- (3) Disengage dowel (A), and remove the top cover.

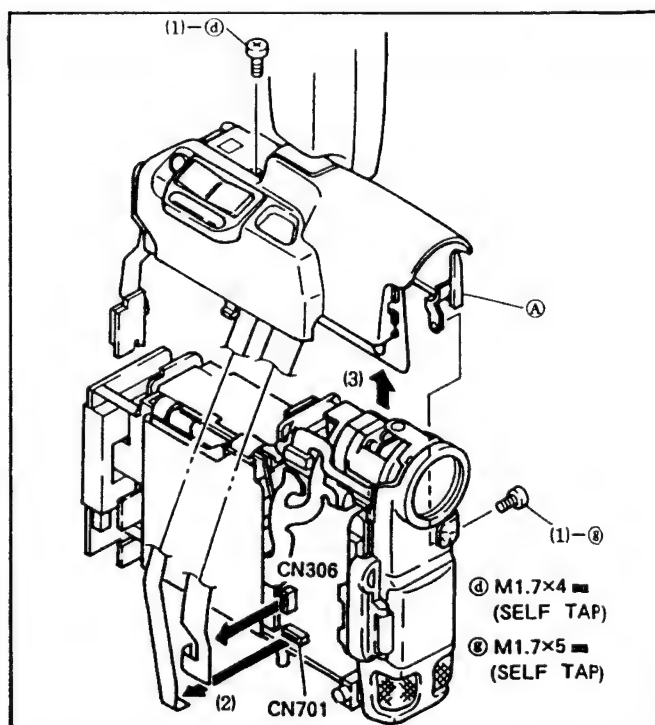


Fig. II-5

2-1-5 Removal of front cover (Fig. II-6)

- (1) Open the AV cover.
- (2) Loosen two screws (f) and one screw (d).
- (3) Remove the front cover.
- (4) Detach the microphone.

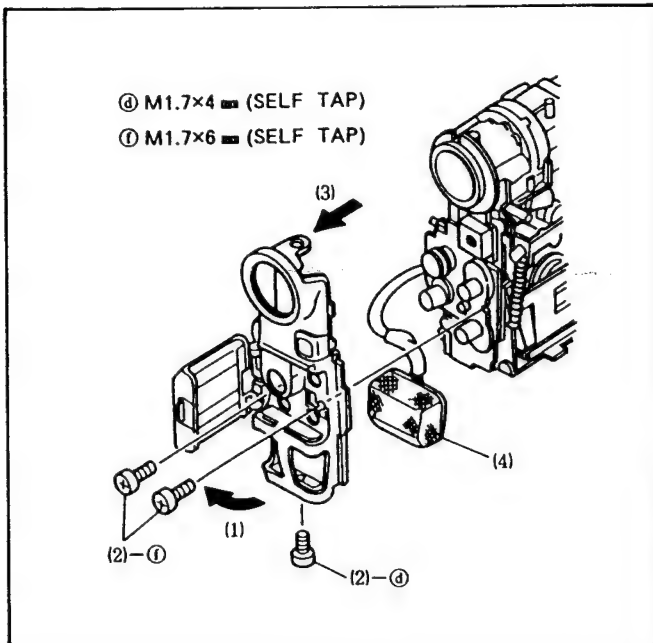


Fig. II-6

2-1-6 Disassembling of top cover (Fig. II-7)

- (1) Loosen three screws (d).
- (2) While disengaging claw (A), take out the electronic viewfinder.

* Note: Exercise care not to disconnect or damage the flexible cable.

- (3) Loosen six screws (d).
- (4) Remove the switch part and zoom key.
- (5) Loosen three screws (d).
- (6) Detach the drum cover sheet, and remove the camera key unit.

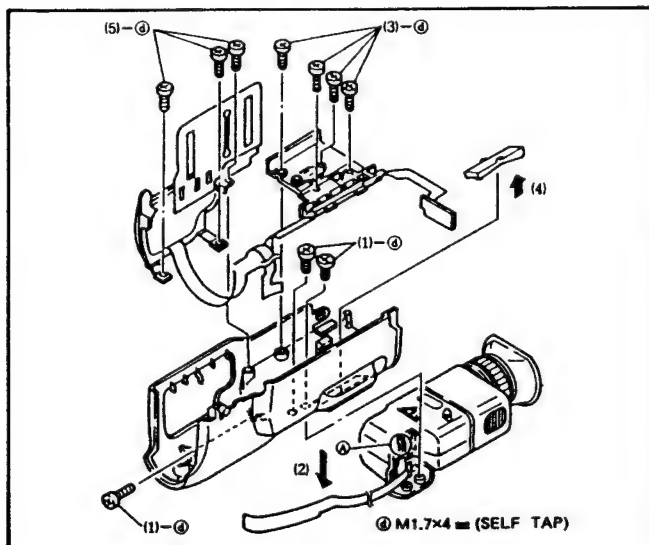


Fig. II-7

2-1-7 Disassembling of electronic viewfinder (Fig. II-8)

- (1) Demount the electronic viewfinder.
 - (2) Loosen two screws (h).
 - (3) Remove the EVF clamp plate, ball and spring.
 - (4) Remove the EVF holder and click spring.
 - (5) Loosen two screws (h) and one screw (q).
 - (6) Separate the EVF upper cover from the lower cover.
- (The EVF upper and lower covers are secured to each other at five claw positions (A). For separating these covers, expand then to unhook claw positions.)
- (7) Remove the EVF P.C.B.

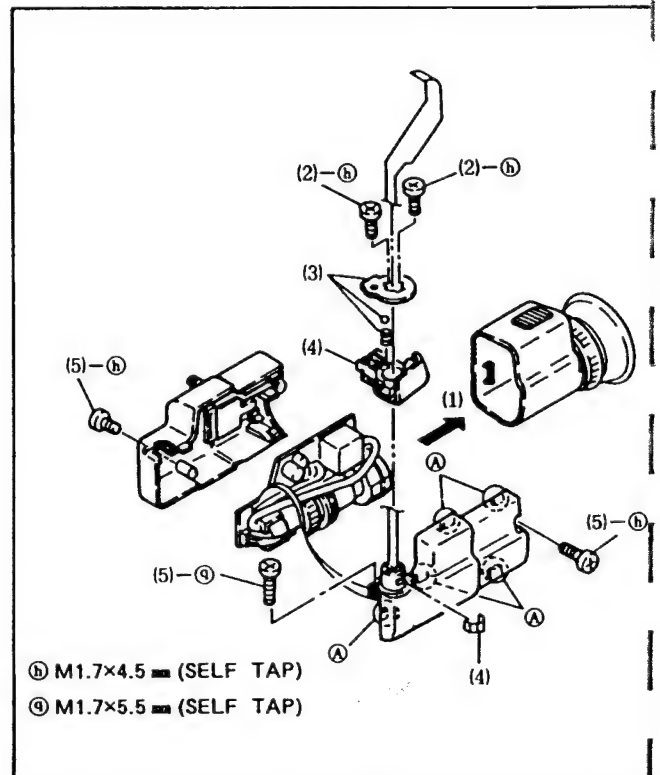


Fig. II-8

-2 Interior disassembling

2-2-1 Removal of lens unit (Fig. II-9)

- (1) Unplug connectors CN2001 and CN2401.
- (2) Loosen three screws (d).
- (3) Remove the lens unit.

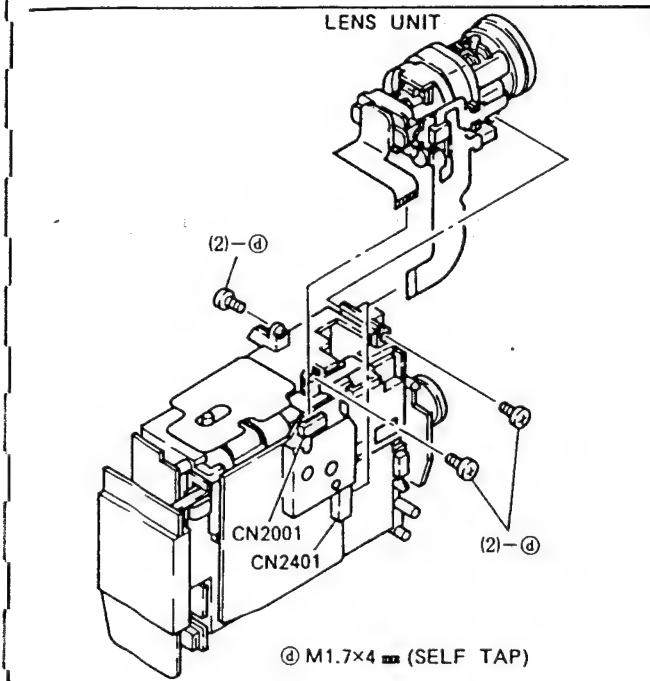


Fig. II-9

2-2-2 Removal of CAMERA MAIN P.C.B. (Fig. II-10)

- (1) Loosen one screw (i).
- (2) Remove the CAMERA MAIN P.C.B.

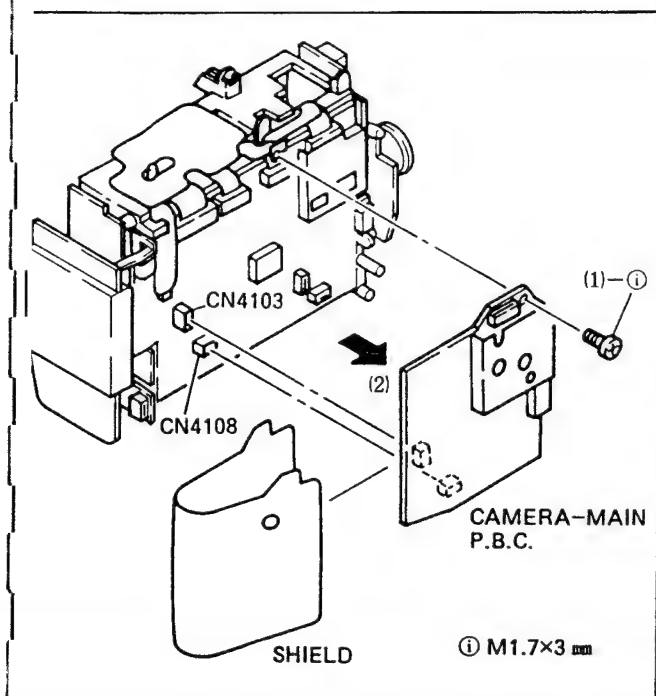


Fig. II-10

2-2-3 Removal of JACK and POWER SUPPLY P.C.B. (Fig. II-11)

- (1) Loosen one screw (j) and one screw (i).
- (2) Remove the POWER SUPPLY P.C.B.
- (3) Loosen three screws (d).
- (4) Unplug connector CN1001.
- (5) Remove the JACK P.C.B.
- (6) Loosen one screw (d) and one screw (i).
- (7) Remove the AUDIO P.C.B.

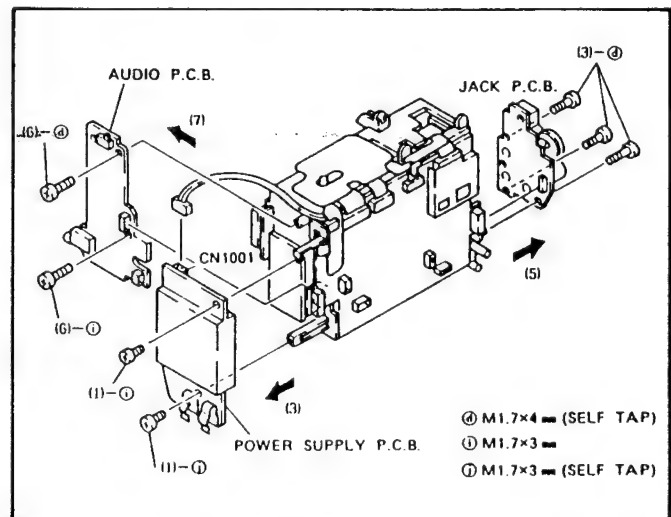


Fig. II-11

2-2-4 Removal of recorder holders and RECORDER MAIN P.C.B. (Fig. II-12)

- (1) Remove the shield 1.
- (2) Remove two screws (K).
- (3) To dismount the recorder main P.C.B., remove the CNs501, 4101, 4102, 4106, 4201 and 4202.
- (4) To remove the power supply holder, audio holder and recorder holders (1) and (2), loosen four screws (l).
- (5) To remove the recorder holder, loosen three screws (m).

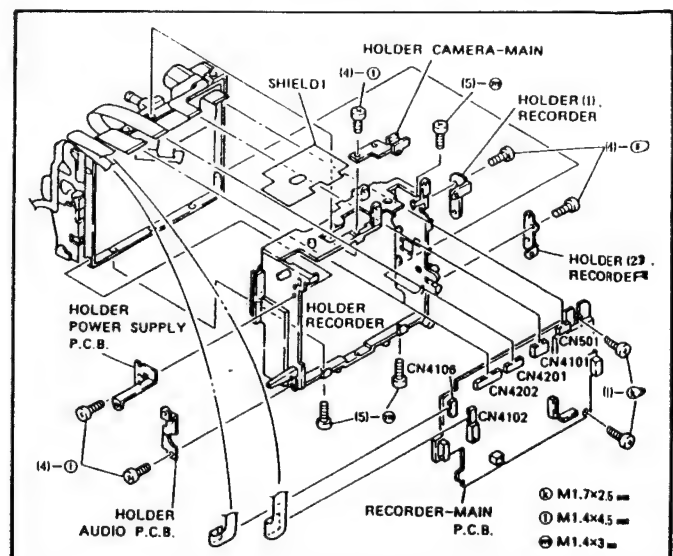


Fig. II-12

2-2-5 Removal of CCD assembly (Fig. II-13)

- (1) Loosen two screws (d).
- (2) Remove the CCD assembly, rubber spacer and crystal filter assembly.

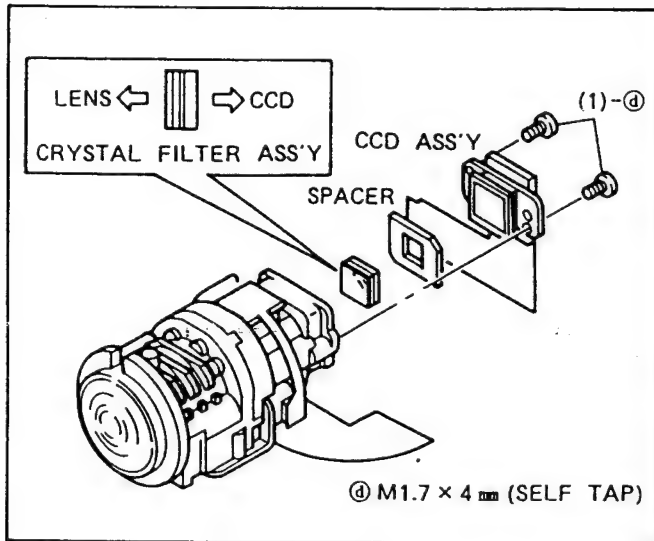


Fig. II-13

2-2-6 Disassembling of POWER SUPPLY P.C.B. (Fig. II-14)

- (1) Unsolder four points (A), and remove shield case 2.
- (2) Unsolder one point (B), and remove shield case 1.

Handling of lithium battery:

1. Carry out soldering within 5 seconds at a soldering iron temperature of 350°C or within 10 seconds at 260°C.
2. The battery must not be heated to 100°C or higher. A reverse voltage must not be applied to it. Do not short-circuit the battery. Otherwise, leakage, burst or firing might occur.

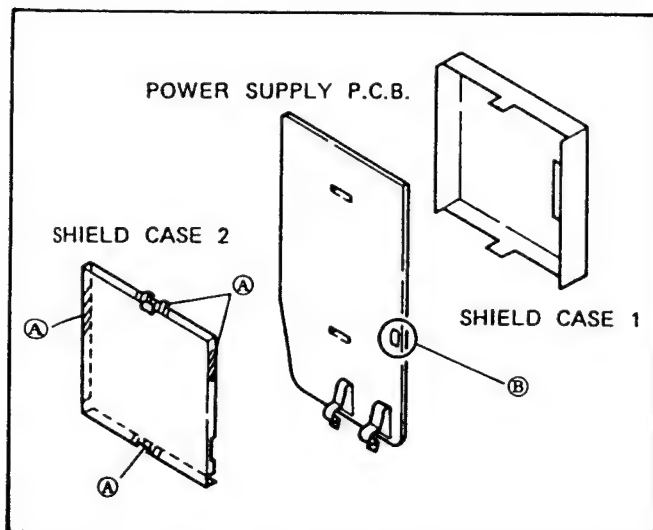


Fig. II-14

2-2-7 Instruction for supplies (Fig. II-15)

In reassembling, use the following supplies at points shown in Fig. II-15.

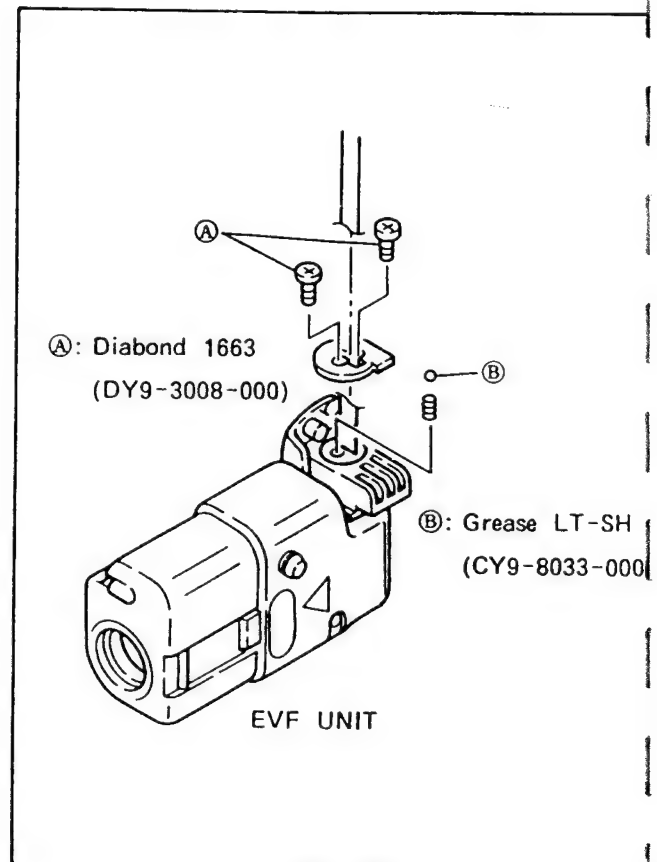


Fig. II-15

2-3 Lens section disassembling

2-3-1 Removal of motors (Fig. II-16)

- 1) Unplug connector CN (A).
- 2) Loosen six screws (n) and one screw (o).
- 3) Remove the AF and PZ motors together with the flexible cables.

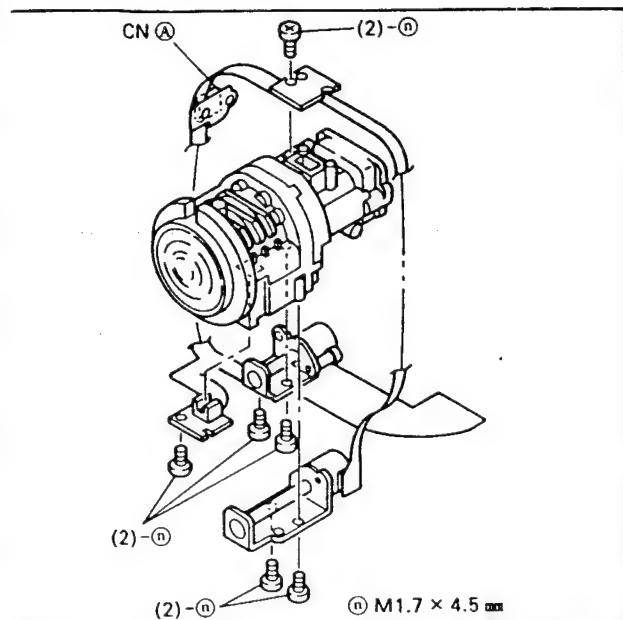


Fig. II-16

2-3-2 Removal of front lens assembly, internal lens group and IG meter (Fig. II-17)

- 1) Detach the flexible cable of IG meter from the dowel.
- 2) Loosen two screws (p).
- 3) Remove the zoom lens group.
- 4) Remove two bars.
- 5) Take out the afocal unit frontward.
- 6) Remove two bars and the focal lens group.

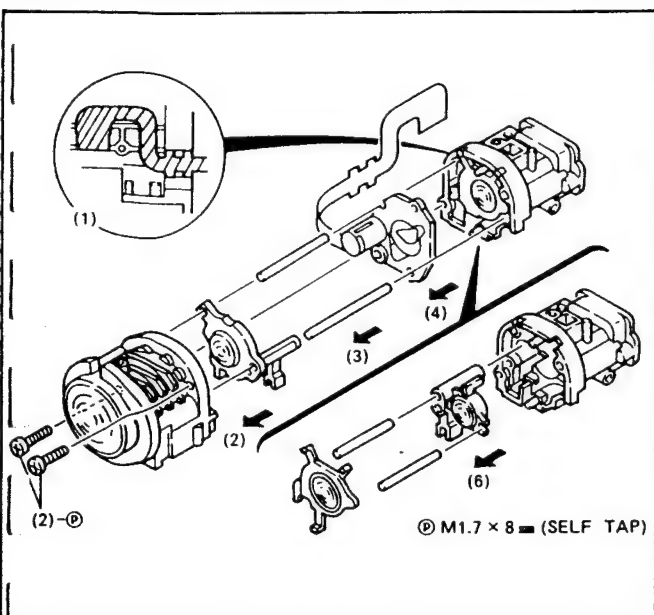


Fig. II-17

2-3-3 Instruction for supplies (Fig. II-18)

After cleaning or replacement, use the following supplies at points shown in Fig. II-18.

- (A) Floil G-474B (DY9-3024-000)
- (B) Mixture of grease GE-C9 (CY9-8043-000) and grease GE-X8 (CY9-8044-000) in a ratio of: GE-C9 : GE-X8 = 1 : 2 (in weight ratio)

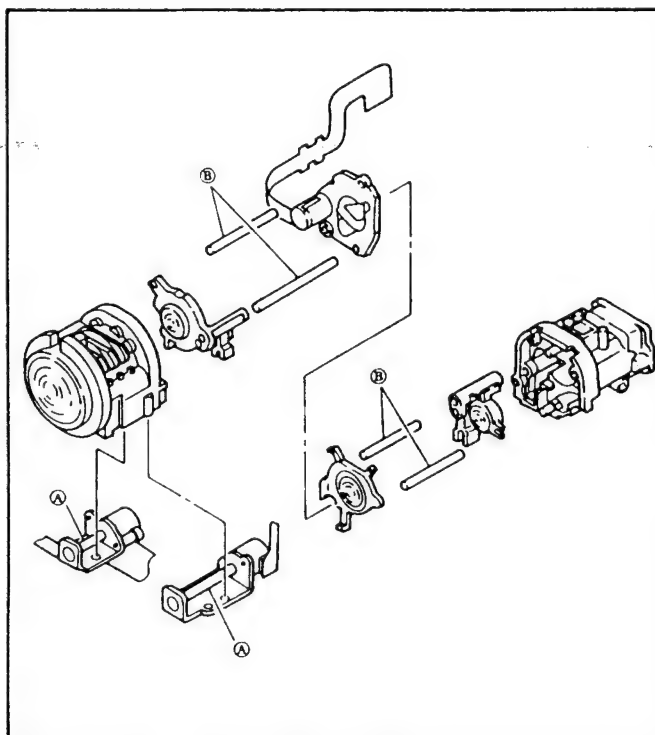
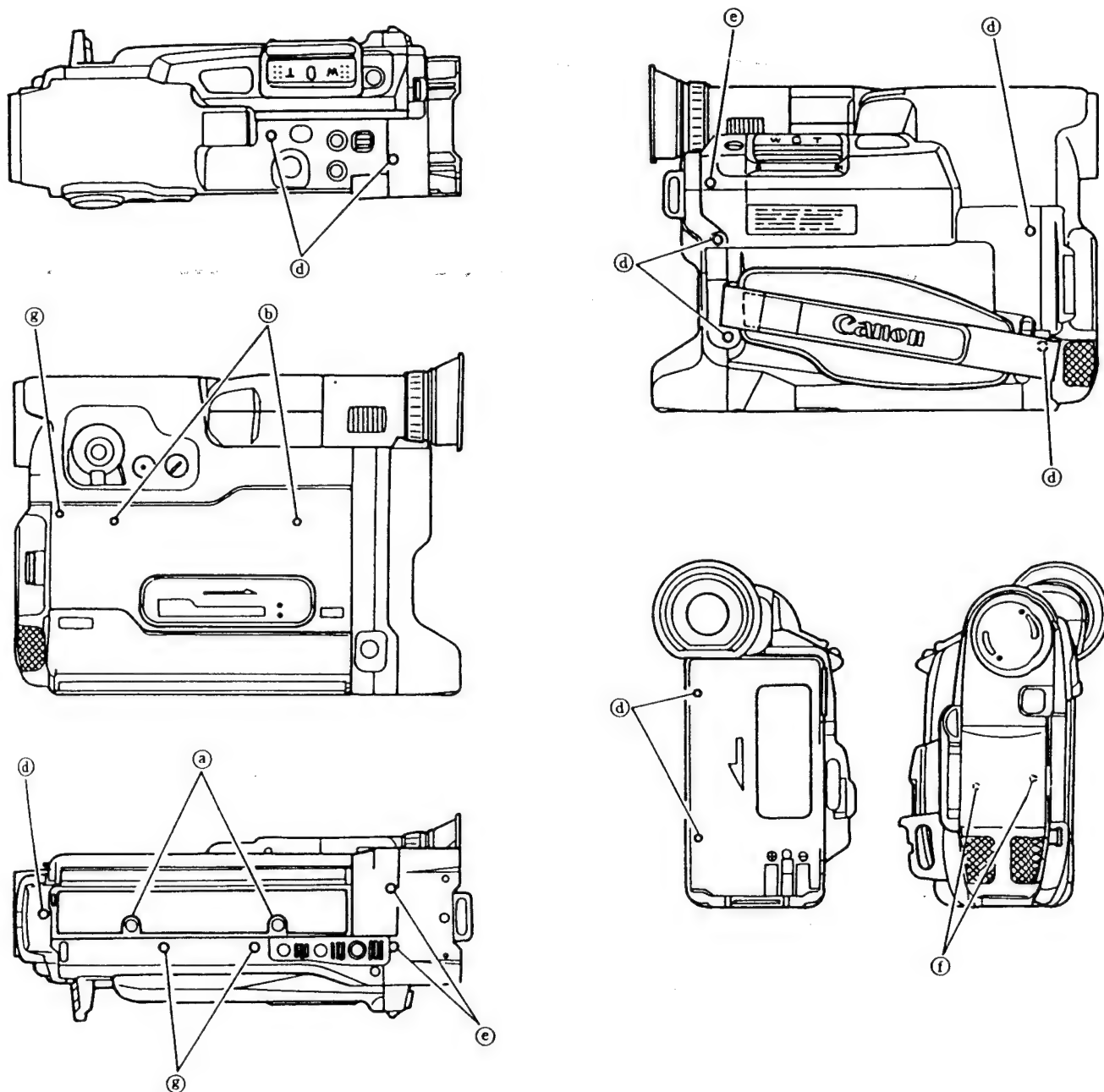


Fig. II-18

2-4 List of external screws (Fig. II-19)



Part No.	Size
(a) DA1-4009	(STEP SCREW)
(b) XA9-0645	M1.4×3 mm
(c) XA4-9170-409	M1.7×4 mm (SELF TAP)
(e) XA1-7170-309	M1.7×3 mm
(f) XA4-9170-609	M1.7×6 mm (SELF TAP)
(g) XA4-9170-509	M1.7×5 mm (SELF TAP)

Fig. II-19

3. Setting

3 Extension of connector cables

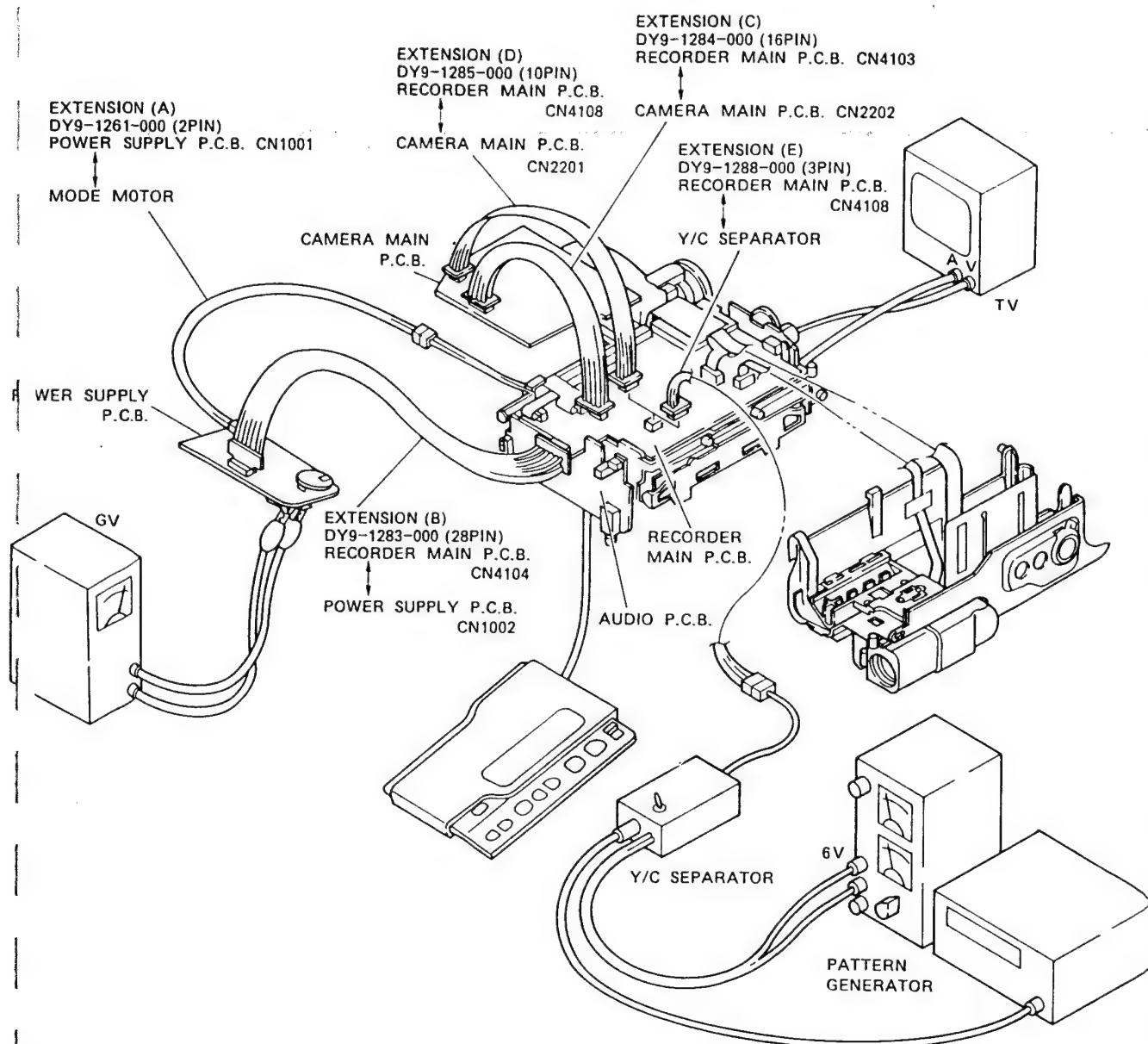


Fig. II-20

3-2 Camera/autofocus circuit adjustment

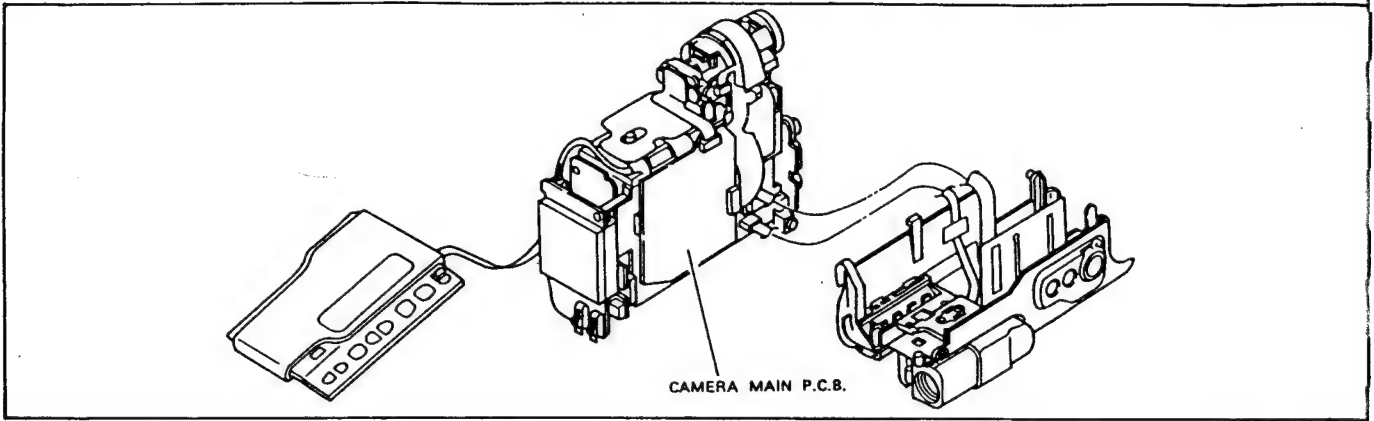


Fig. II-21

For adjustment of the camera/autofocus circuit, it is not required to use the extension cable in principle.

When conducting ES offset adjustment for the autofocus circuit, however, remove the CAMERA MAIN P.C.B. from the RECORDER MAIN P.C.B. (since the measurement point is located on the back side of CAMERA MAIN P.C.B.). Then, extend the lead wire from the measurement point or connect the extension cable (C) or (D) so that the back side of CAMERA MAIN P.C.B. can be measured.

In addition to general-purpose measuring instruments such as a regulated power supply unit, prepare the following items for camera/autofocus circuit adjustment.

- ° Gray scale chart
- ° Color bar chart
- ° Siemens chart
- ° CZ adjustment chart (Prepare this chart referring to Fig. II-22.)
- ° Color viewer 5600K
- ° CCA12 filter

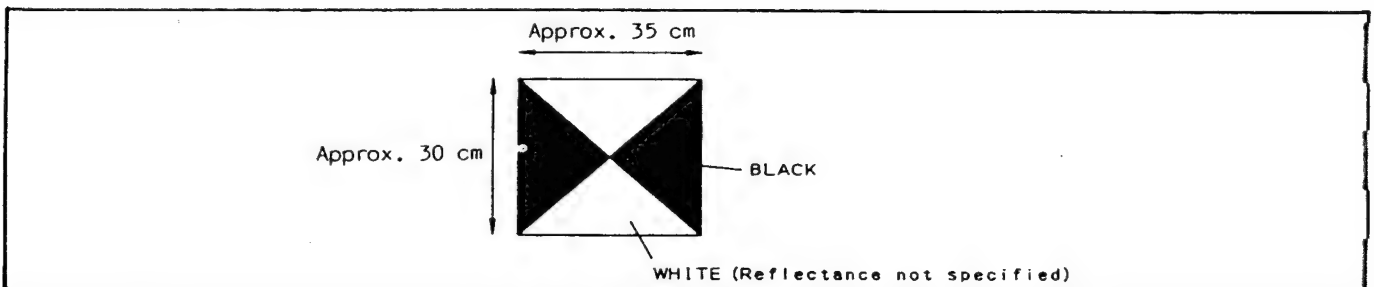


Fig. II-22

Precautions:

- (1) Before attempting adjustment, warm up the instruments for at least three minutes.
- (2) Standard angle of view
 - ° The standard angle of view is obtained when the test chart is displayed over the entire screen of full scan monitor.
 - ° When checking on an oscilloscope, make adjustment so that the gray scale section will be 36 μ s. or the color bar section will be 52 μ s.
 - ° When using other chart, align the center at the standard angle of view that has been set with the gray scale or color bar chart.
 - ° It is advisable to shoot the chart from a distance of approx. 1.4 meters unless otherwise specified.

3.3 Settings for power supply and audio adjustment

For adjustments for the power supply and audio action, use the extension cables (A) and (B). Then, remove the POWER SUPPLY P.C.B. from the RECORDER MAIN P.C.B.

so, for the adjustment of power supply, detach the shield plate from the POWER SUPPLY P.C.B. before the adjustment.

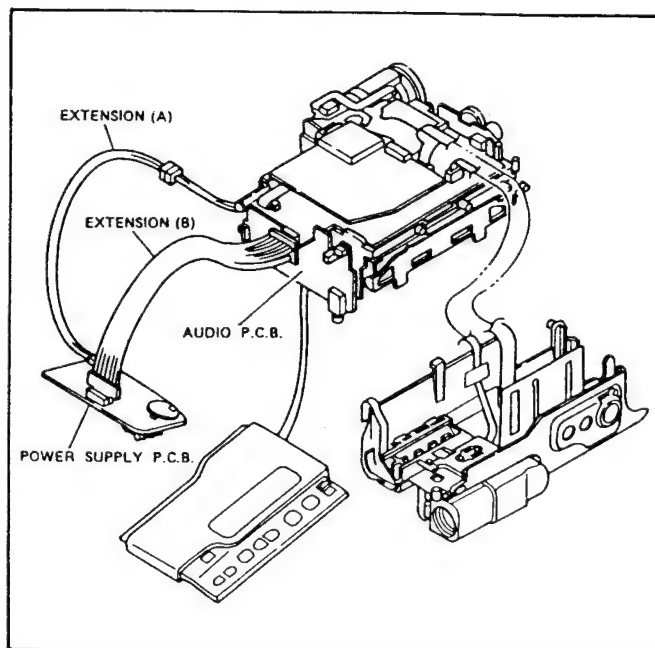


Fig. II-23

5. Recorder circuit adjustment

Adjust the recorder circuit with the CAMERA MAIN P.C.B. removed.

Adjust the recording system with the Y/C Separator connected to the CN4108 of RECORDER MAIN P.C.B. (Y9-1093-000) via the Extension Cable E.

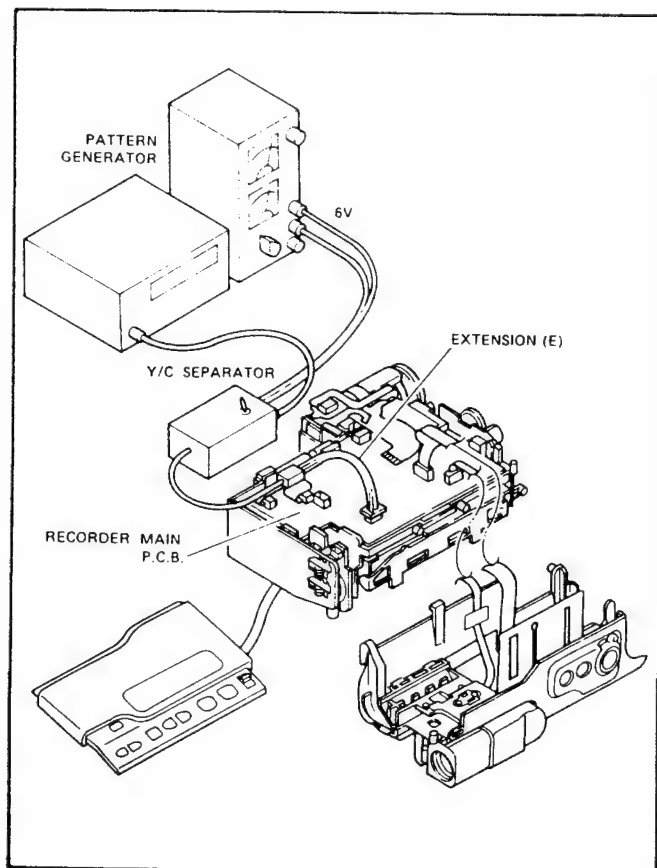


Fig. II-24

How to use Y/C separator

- 1) Connect the Y/C Separator as shown in the Figure II-24.
Then turn on the power switch of camcorder and set the CAMERA mode.
- 2) Set the switch of Y/C Separator to C.
- 3) Set the Signal Generator to White 100% output status.
- 4) Observing the output from the pin 1 of CN4108 (RECORDER MAIN P.C.B.), adjust the output VR of Signal Generator until it becomes 500 mVp-p.
- 5) Observing the output from the pin 2 of CN4108 (RECORDER MAIN P.C.B.), adjust the VR101 of Y/C Separator until the burst signal becomes 143 mVp-p.

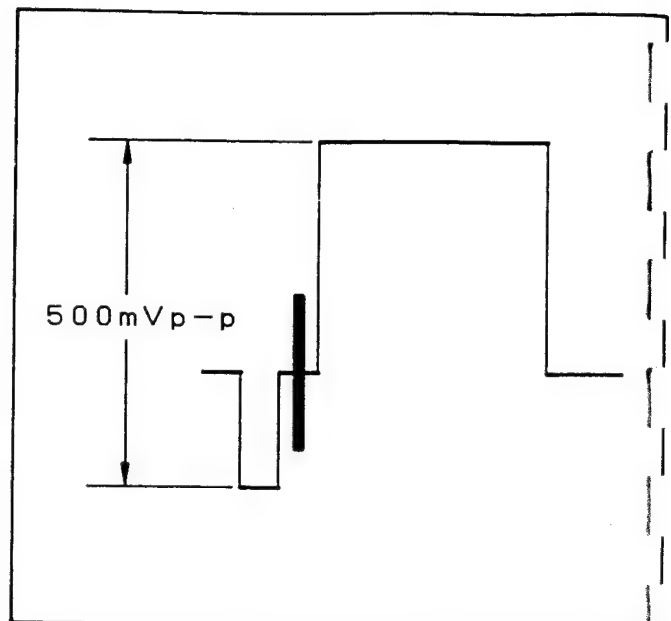


Fig. II-25

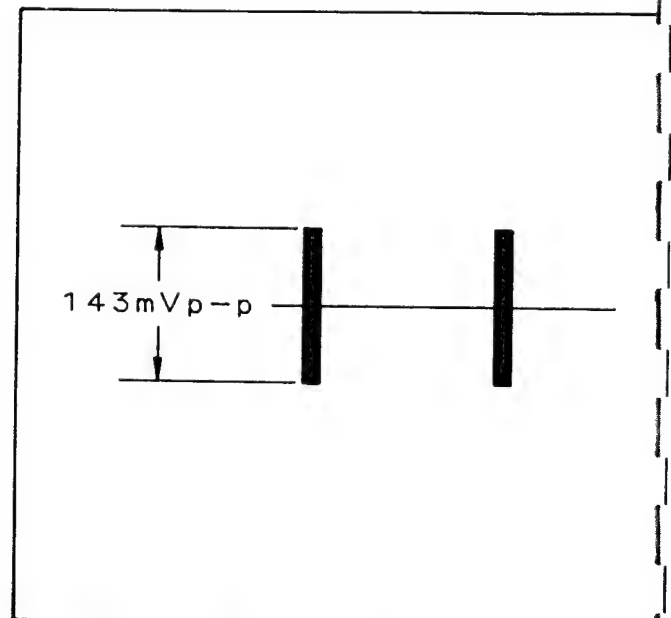


Fig. II-26

Service Modes

4-1 How to set service modes

The normal mode can be switched to the service modes (SERV 1 to SERV 7) by short-circuiting the patterns of the remote controllers. The positions to be short-circuited are also shown in Fig. II-27. (The remote controller WL-1 also has patterns but no hole in its outer casing. Therefore, use the conventional remote controller specified in Fig. II-27.)

The remote controllers are classified as service parts.

Example: WL-600 (DY2-1294-000)

Switching between the normal mode and service modes or among the service modes occurs each time the Service Mode key is pressed. (Fig. II-28)

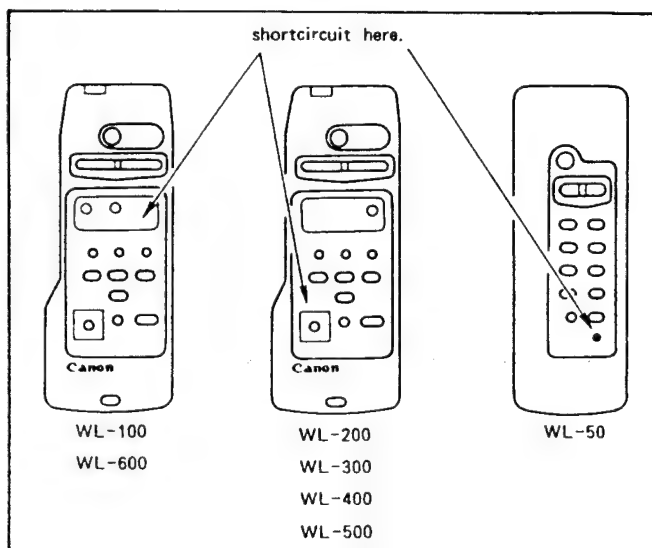


Fig. II-27

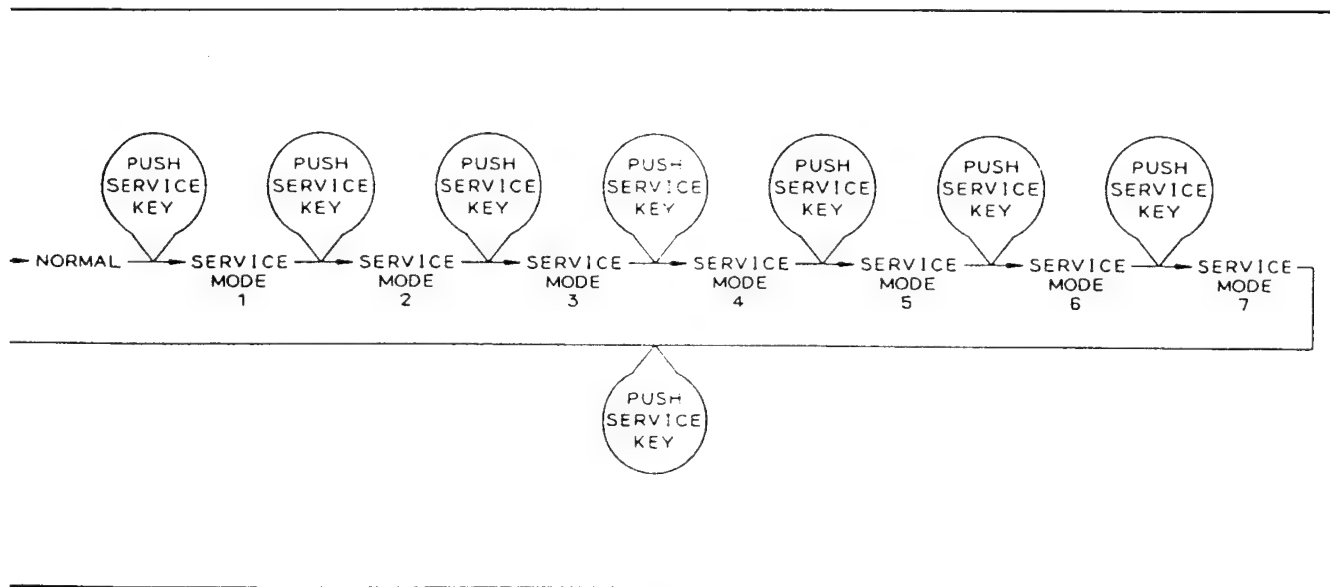


Fig. II-28

4-2 Service mode 1 (Not used)

For inspection at factory.

This mode is not applicable to servicing.

4-3 Service mode 2 (Camera adjustments)

This mode is used for adjustment of the camera section.

For adjustment/setting, the following keys are available.

(Main unit)

- ° PAUSE key Moves the arrow down.
(Bring the arrow to an address to be selected.)
- ° START/STOP key .. Moves the arrow up.

(Remote controller)

- ° PLAY key Goes to the next page.
- ° STOP key Returns to the previous page.
- ° PAUSE key Moves the arrow down.
(Bring the arrow to an address to be selected.)
- ° START/STOP key .. Moves the arrow up.
- ° FF key Used to change data.
(Pressing this key increments a data value.)
- ° REW key Used to change data.
(Pressing this key decrements a data value.)
- ° REC key Used to write data into the memory.
* After changing data, be sure to write it into the memory using the REC key.

Table II-3

Address	Adjustment item	Data
0D80	CCD reset	Specified value
0D81	CCD sub-voltage	Specified value
0D84	Iris encoder 1	Automatic adjustment
0D85	Iris encoder 2	Automatic adjustment
0D86	Iris encoder 3	Automatic adjustment
0D87	Iris encoder 4	Automatic adjustment
0D88	Setup level	Adjustment
0D89	Black level take-in	Automatic adjustment
0D8C	Burst level	Adjustment
0D8D	White clip	Adjustment
0D8E	Auto iris	Adjustment
0D8F	AGC	Adjustment
0D90	Y1 gain	Adjustment
0D91	Y2 gain	Adjustment
0D92	Y level	Adjustment
0D94	Color difference simultaneity	Adjustment
0D96	R gain	Adjustment
0D97	B gain	Adjustment
0D98	R-Y gain	Adjustment
0D99	B-Y gain	Adjustment
0D9A	R-Y hue	Adjustment
0D9B	B-Y hue	Adjustment
0D9C	R control, 5600°K	Adjustment
0D9D	B control, 5600°K	Adjustment
0D9E	R control, 3200°K	Adjustment
0D9F	B control, 3200°K	Adjustment
0DA0	White level take-in, 3200°K	Automatic adjustment
0DA1	White level take-in, 5600°K	Automatic adjustment
0DA2	AF BPF	Adjustment
0DA3	ES offset	Adjustment

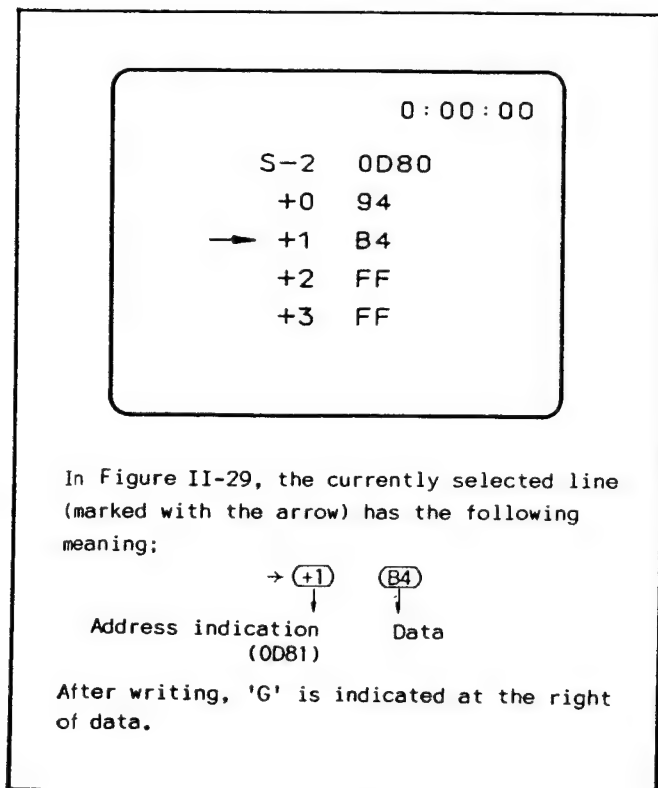


Fig. II-29

4-4 Service mode 3 (AF adjustments)

This mode is used for AF adjustment.

Pressing the COUNTER RESET key of remote controller in service mode 3 enables CZ adjustment.

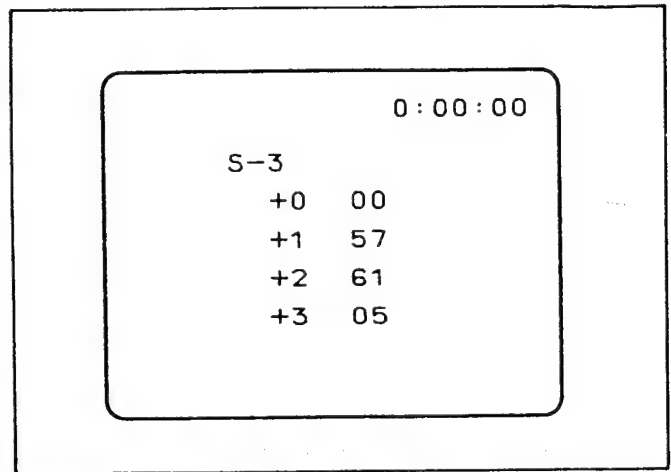


Fig. II-30

4-5 Service mode 4 (Not used)

This mode is not applicable to servicing.

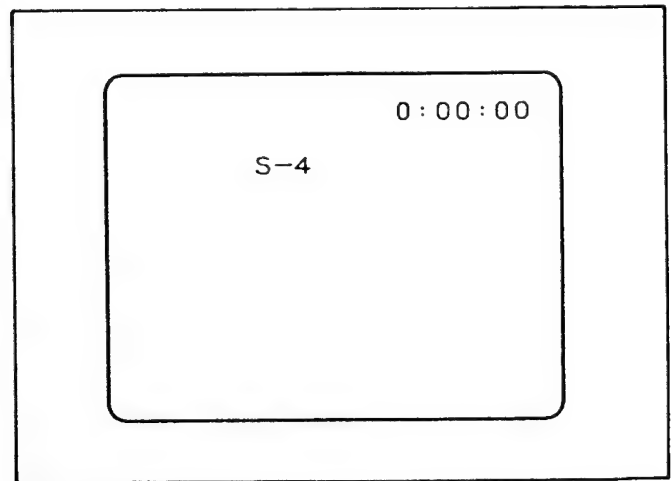


Fig. II-31

4-6 Service mode 5

(Shifts duty ratio of switching pulse for recorder adjustments)

This mode is used for tape pass adjustment of the recorder mechanism.

Pressing of MODE SELECT SW in service mode 5 sets the PLAY mode, and then the condition I is established by pressing the PLAY key. Each time the keys STOP, MODE SELECT SW (for CAMERA mode), '+', etc. are pressed as indicated below, the condition I, II or III is set up in a cyclic manner.

Conditions:

- I. Shifts duty ratio of switching pulse by 75% off-tracking.

*Procedures:

- 1) Push the STOP key.
- 2) Set the CAMERA mode by the MODE SELECT SW.
- 3) Push the counter reset key of the wireless remote controller.
- 4) Set the PLAY mode by the MODE SELECT SW.
- 5) Push the PLAY key.

- II. Shifts duty ratio of switching pulse by 100% on-tracking.

Perform the *Procedures.

- III. Normal duty ratio of switching pulse.

Perform the *Procedures.

- I. Shifts duty ratio of switching pulse by 75% off-tracking.

II.

.
. .
. .
. .
. .

Pressing of REC key of wireless remote controller in I mode increases the shift amount, and pressing of STILL key decreases it.

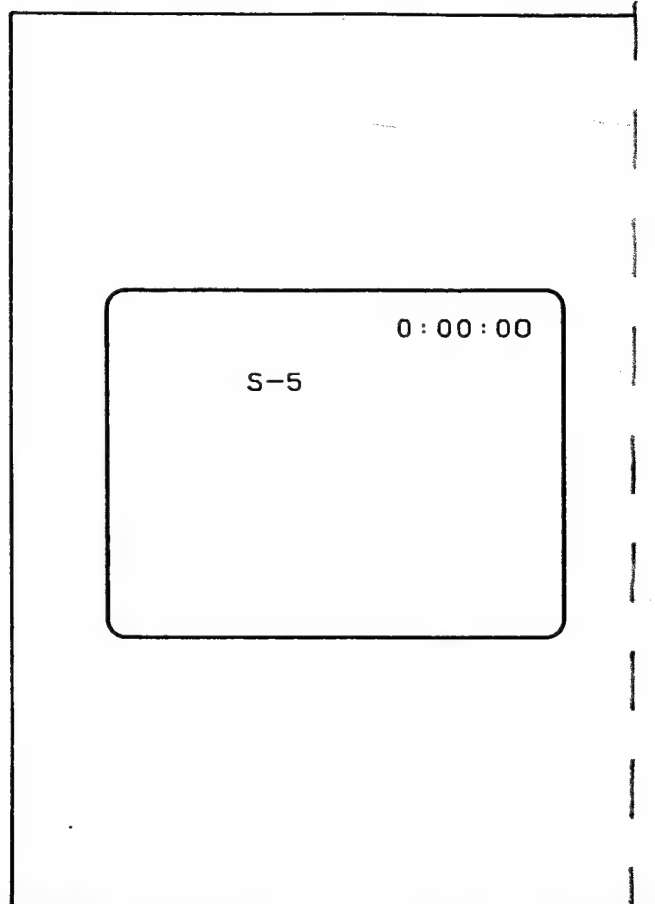


Fig. II-32

4-7 Service mode 6 (Power-save/destination)

This mode is used for power-saving/destination setting.

For adjustment/setting, the following keys are available.

(Remote controller)

COUNTER RESET key ... Used to write data into the memory or change the place-of-destination setting.

• TAPE RETURN key Writing of insufficient power voltage data

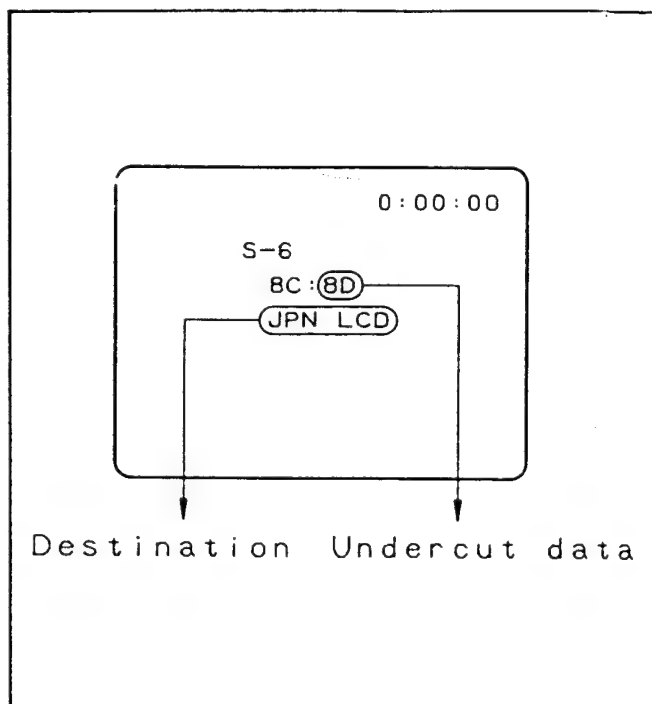


Fig. II-33

4-8 Service mode 7

This mode indicates the current error occurred in the unit.

The numbers of each data denotes the following errors.

- 08 : EOT
- 09 : BOT
- 0B : Trouble Eject
- 81 : Loading Motor error
- 82 : Drum Motor error
- 83 : Capstan Motor error
- 84 : T reel error
- 85 : S reel error

If the data other than the above is displayed, it is used for our plant. (not usable for servicing)

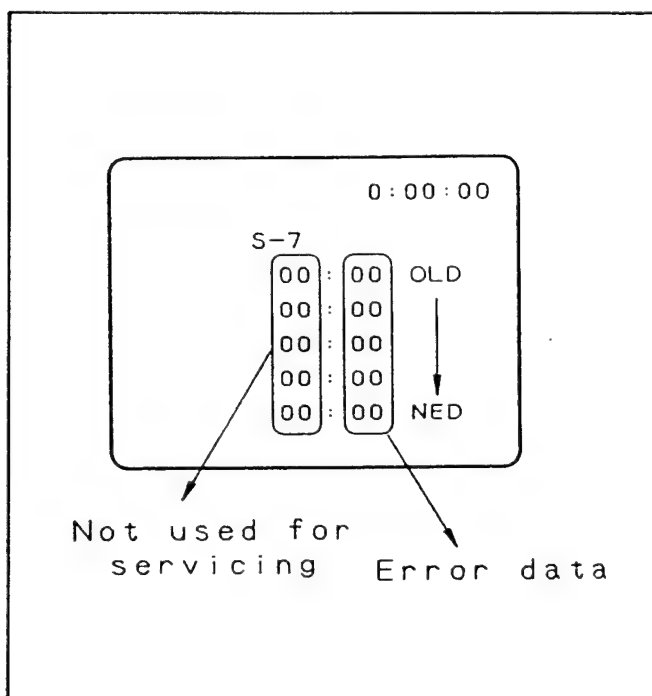


Fig. II-34

5. Electrical Adjustments of Camera Section

Electrical adjustment of the camera section should be carried out in the sequence of the following items. If any item is adjusted, all the subsequent items should be adjusted also.

5-1 Clock frequency adjustment

M. EQ.	Frequency counter Note: Connect the frequency counter through the oscilloscope.
TP/TRIG.	C-MAIN P.C.B. TP2005 (CL)
ADJ.	C-MAIN P.C.B. VC2001 (CL)
SPEC.	14187500 \pm 30 Hz

5-2 PLL adjustment

M. EQ.	Digital voltmeter
TP/TRIG.	C-MAIN P.C.B. TP2007 (PLL)
ADJ.	C-MAIN P.C.B. VC2002 (PLL)
SPEC.	2.5 \pm 0.2 V

5-3 CCD reset adjustment

MODE	Service mode 2
ADJ.	0D80 (data address)
SPEC.	Select data according to the numeral (0 to 7) indicated on the back of CCD. e.g. If '5F' is indicated on the back of CCD, select data corresponding to '5' from the table shown below.

Data table:

0	1A	2	57	4	94	6	D2
1	39	3	76	5	B3	7	F1

5-4 CCD sub-voltage adjustment

MODE	Service mode 2
ADJ.	0D81 (data address)
SPEC.	Select data according to the alphabetic character (E to Z) indicated on the back of CCD. e.g. If '5F' is indicated on the back of CCD, select data corresponding to 'F' from the table shown below.

Data table:

E	0D	L	4E	S	90	Y	D5
F	18	M	59	T	9B	Z	E1
G	23	N	64	U	A5		
H	2E	P	6F	V	B4		
J	39	Q	7C	W	BF		
K	44	R	84	X	CB		

5-5 Iris encoder adjustment

MODE	Service mode 2
ADJ.	0D84, 0D85, 0D86, 0D87 (data address)

Procedures:

- (1) Connect the positive polarity terminal of the regulated power supply to TP2301 (IRIS) and the negative polarity terminal to TP2201 (GND).
- (2) Set the regulated power supply to 5.0 ± 0.1 V, and open the iris fully. Then, wait for five seconds or more.
- (3) Select data address '0D84', and press the REC key of remote controller (to write data into the memory).
- (4) Select data address '0D85'.
- (5) Set the regulated power supply to 1.6 ± 0.1 V, and close the iris fully. Then, wait for five seconds or more.
- (6) Press the REC key of remote controller. If 'N' is indicated at this step, go back to step (2).
- (7) Select data address '0D86', and press the REC key of remote controller. If 'N' is indicated at this step, go back to step (2).
- (8) Select data address '0D87'.
- (9) Set the regulated power supply to 5.0 ± 0.1 V, and open the iris fully. Then, wait for five seconds or more.
- (10) Press the REC key of remote controller. If 'N' is indicated at this step, go back to step (2).

5-6 Setup level adjustment

CHART	Lens capped
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2204 (Y)
ADJ.	OD88 (data address)
SPEC.	0 ± 1 mV

Procedures:

- (1) Set the data so that the waveform of luminance signal is higher than the blanking level by 30 mV (approx.). (See the Fig. A)
- (2) Check the center of waveform (noise). (See the line B)
- (3) Set the data so that the center of waveform is lowered to the blanking level. (See the Fig. C)

* Note: The excessive lowering of waveform makes the waveform disappear together with a noise. (See the Fig. D)
Be sure to stop it where the noise is eliminated by half (approx.).

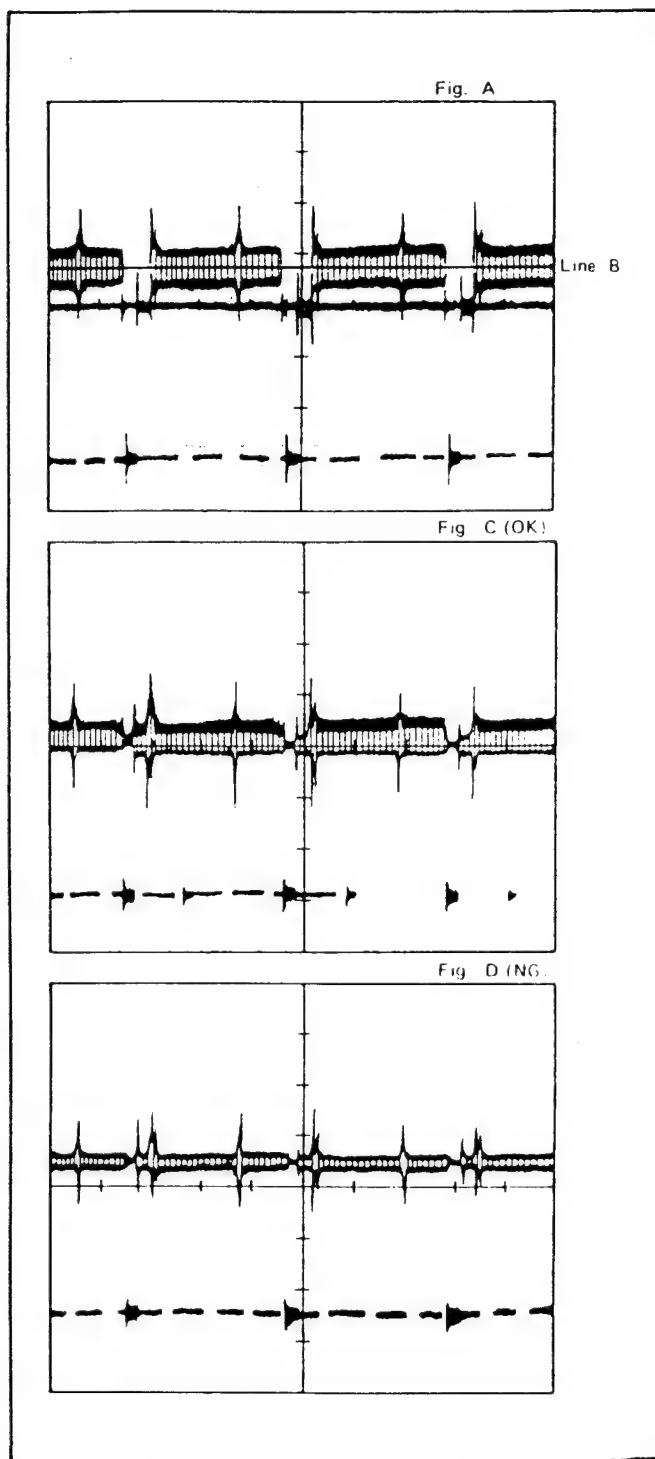


Fig. II-35

20 μ sec/5 mV

5-7 Black level take-in adjustment

CHART	Lens capped
MODE	Service mode 2
ADJ.	0D89 (data address)
SPEC.	Only writing with the REC key (automatic adjustment)

5-8 Burst level adjustment

CHART	Lens capped
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2205 (C)
ADJ.	0D8C (data address)
SPEC.	150 ± 10 mVp-p

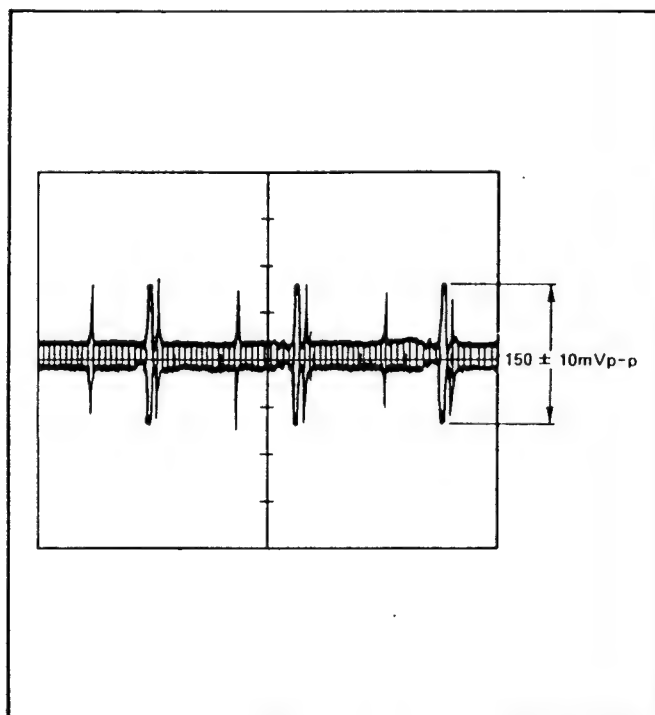


Fig. II-36 20 μsec/5 mV

5-9 White clip adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2204 (Y)
ADJ.	0D8D (data address)
SPEC.	400 ± 10 mV

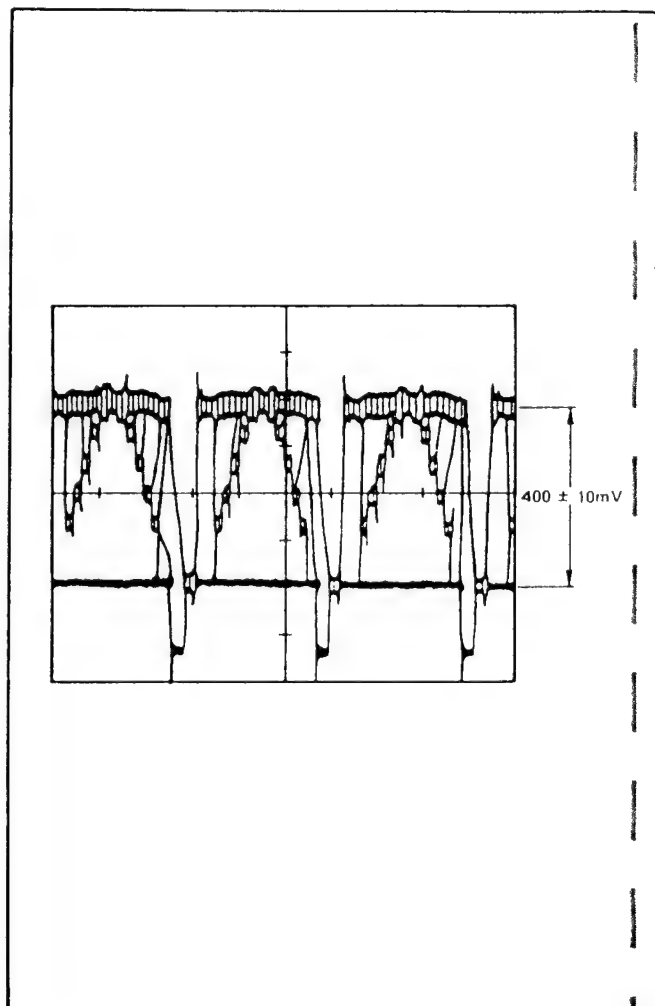


Fig. II-37 20 μsec/10 mV

5-10 Iris adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2101 (CS)
ADJ.	0D8E (data address)
SPEC.	230 ± 10 mV

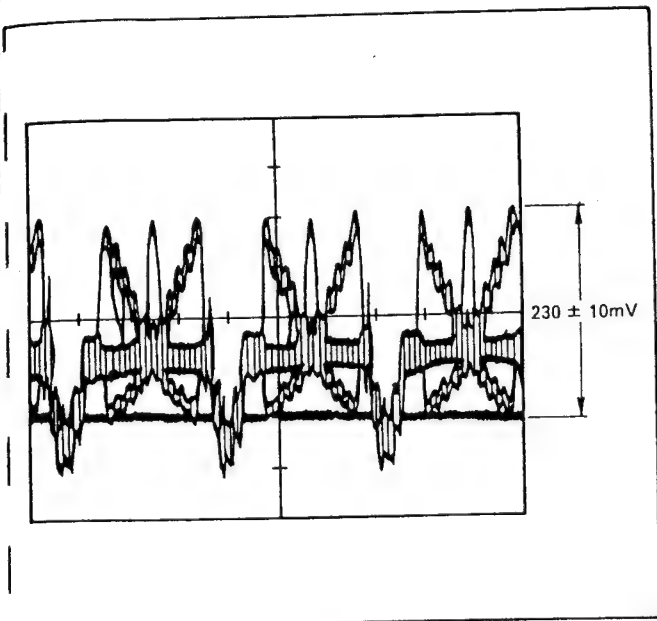


Fig. II-38 $20 \mu\text{sec}/5 \text{ mV}$

5-11 AGC adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2201 (YH)
ADJ.	0D8F (data address)
SPEC.	220 ± 10 mV

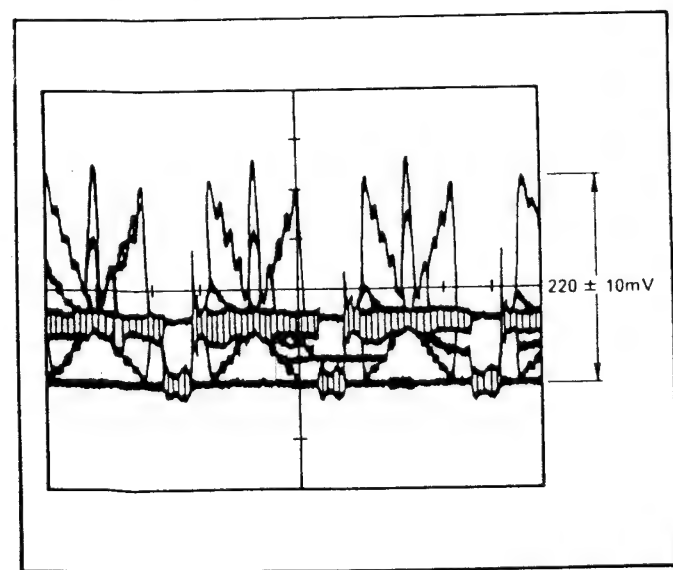


Fig. II-39 $20 \mu\text{sec}/5 \text{ mV}$

5-12 Aperture adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2206 (VAPC)
ADJ.	0D90, 0D91 (data address)
SPEC.	Video signal minimized (minimum level).

Procedures:

- (1) On the oscilloscope, observe a signal appearing at TP2206 (VAPC).
- (2) Select data address '0D90', and change data so that the video signal will be minimized.
- (3) Select data address '0D91', and change data so that the video signal will be minimized.

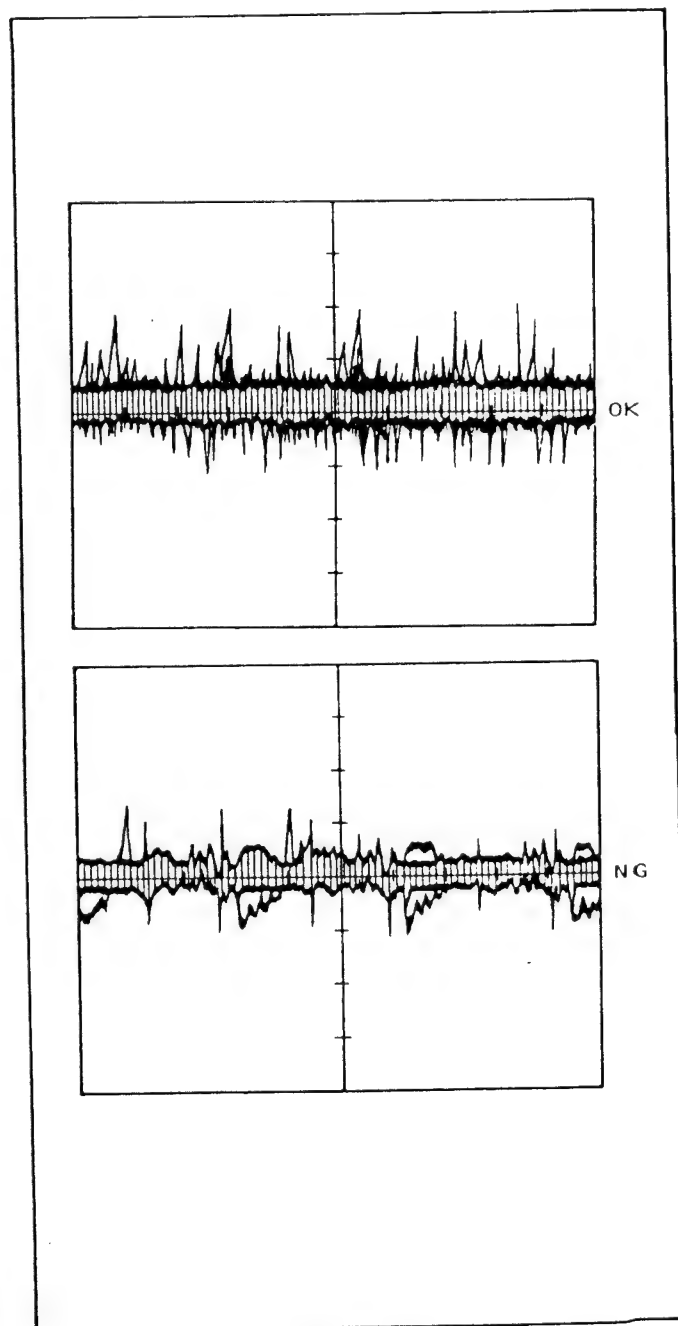


Fig. II-40 $20 \mu\text{sec}/5 \text{ mV}$

5-13 Y level adjustment

CHART	Gray scale (5600°K)
MODE	Service mode 2
M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. TP2204 (Y)
ADJ.	0D92 (data address)
SPEC.	350 ± 10 mV

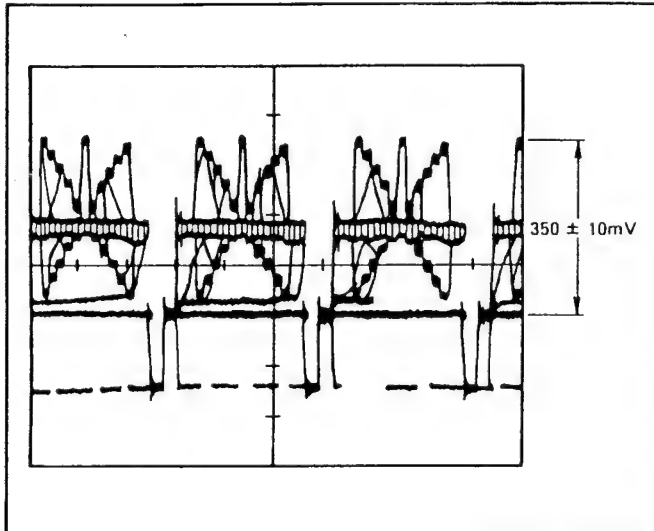


Fig. II-41 20 μsec/10 mV

5-14 Color difference simultaneity adjustment

CHART	Color bar (5600°K)
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	0D94 (data address)
SPEC.	BD

Procedures:

- (1) Select the data address "0D94", and set the data to "BD".
- (2) Check if there is no split of bright dots appearing on the vectorscope.

5-15 Preset white adjustment

CHART	Color bar (5600°K)
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	0D96, 0D97 (data address)
SPEC.	Bright point aligned with center.

Procedures:

- (1) Select data address '0D96', and change data so that the bright point will be centered direction A.
- (2) Select data address '0D97', and change data so that the bright point will be centered direction B.

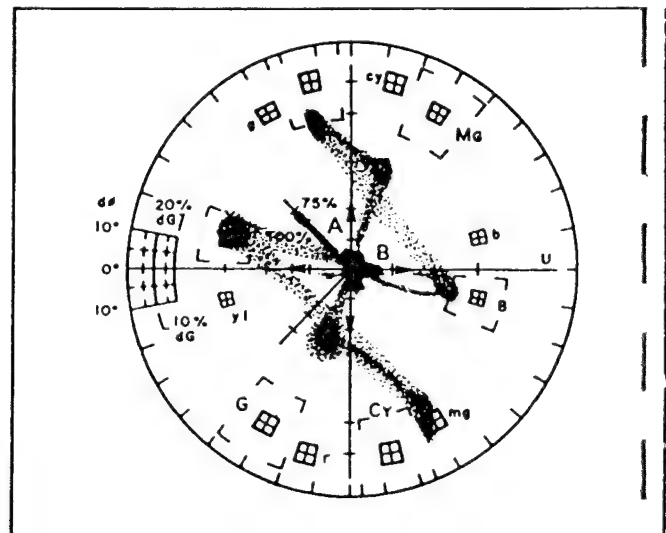


Fig. II-42

5-16 Color balance adjustment

CHART	Color bar (5600°K)
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	0D98, 0D99 ... Gain 0D9A, 0D9B ... Hue (data address)
SPEC.	Gain (with respect to burst) Hue R : 2.0 times R : 103° Ye: 1.6 times Ye: 160°

* Note: After color balance adjustment, be sure to perform the preset white adjustment (5-15). (If deviation is found, repeat adjustment until it is eliminated.)

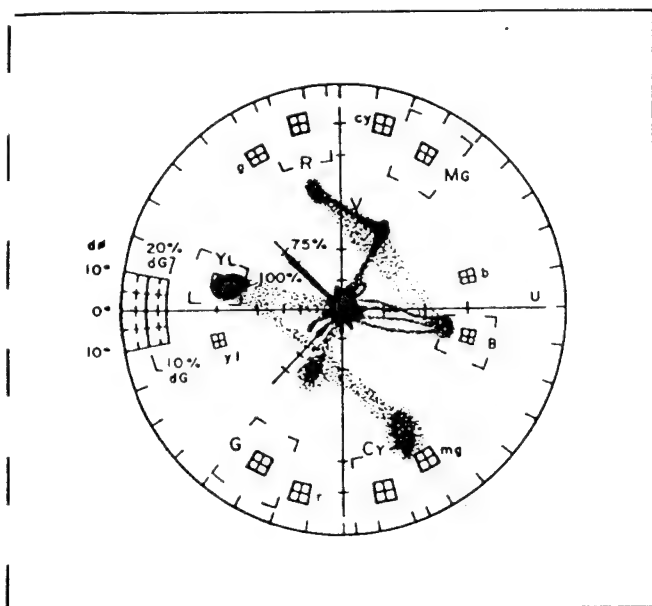


Fig. II-43

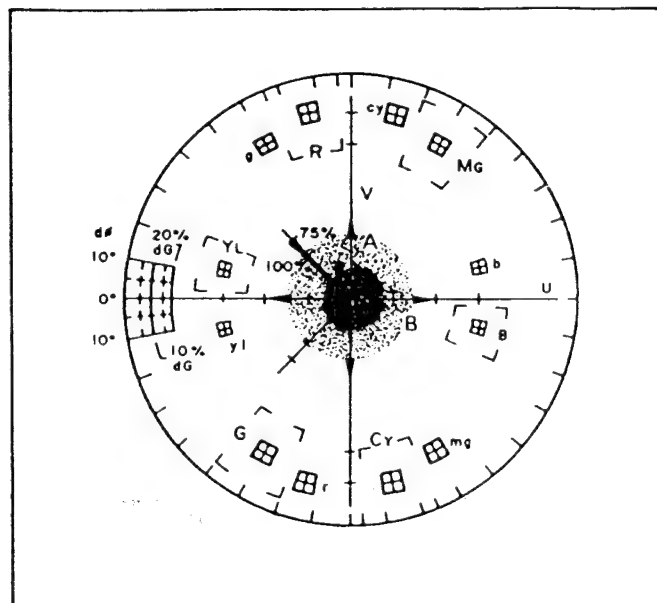


Fig. II-44

5-18 White balance 3200 adjustment

CHART	Light box (5600°K) + CCA12
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	0D9E, 0D9F (data address)
SPEC.	Bright point aligned with center.

Procedures:

- (1) Select data address '0D9E', and change data so that the bright point will be centered in direction A.
- (2) Select data address '0D9F', and change data so that the bright point will be centered in direction B.

5-17 White balance 5200 adjustment

CHART	Light box (5600°K)
MODE	Service mode 2
M. EQ.	Vectorscope
TP/TRIG.	VIDEO OUT
ADJ.	0D9C, 0D9D (data address)
SPEC.	Bright point aligned with center.

Procedures:

- (1) Select data address '0D9C', and change data so that the bright point will be centered in direction A.
- (2) Select data address '0D9D', and change data so that the bright point will be centered in direction B.

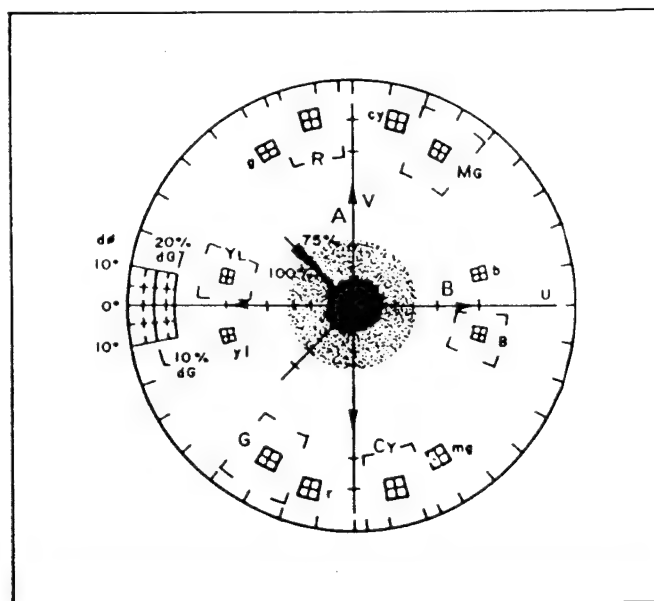


Fig. II-45

5-19 White level take-in 3200 adjustment

CHART	Light box (5600°K) + CCA12
MODE	Service mode 2
ADJ.	0DA0 (data address)
SPEC.	Only writing with the REC key. (automatic adjustment)

5-20 White level take-in 5600 adjustment

CHART	Light box (5600°K)
MODE	Service mode 2
ADJ.	0DA2 (data address)
SPEC.	Only writing with the REC key. (automatic adjustment)

5-21 Locations of TPs and VRs

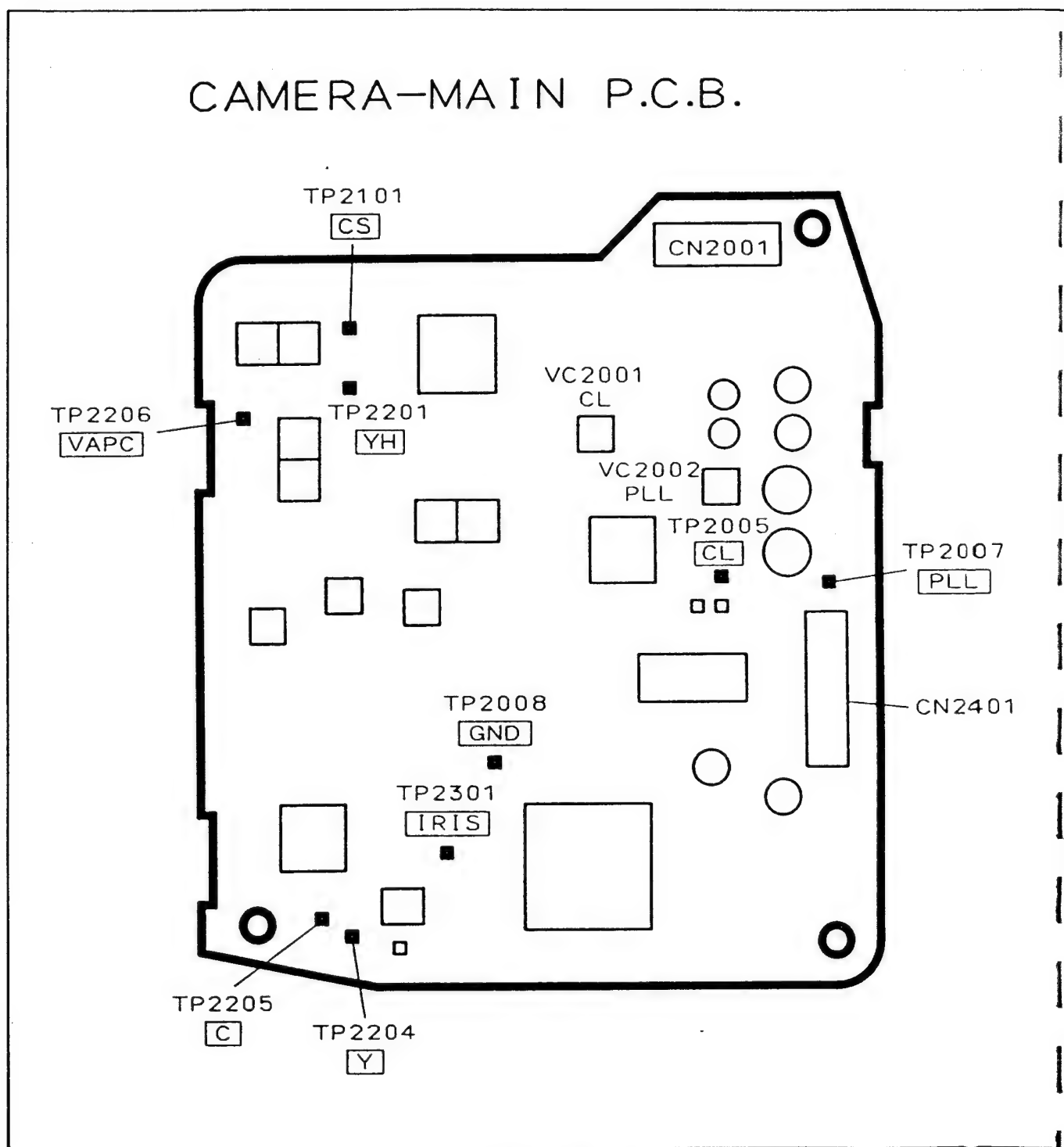


Fig. II-46

Electrical Adjustments of AF Section

The following items 6-2, 6-3 and 6-4 (AF adjustment) should be carried out after completing electrical adjustment of the camera section. Also, if any electrical adjustment of the camera section has been made, be sure to carry out items 6-2, 6-3 and 6-4.

6-1 Offset adjustment

M. EQ.	Oscilloscope
TP/TRIG.	C-MAIN P.C.B. IC2401 - pin 41, C-MAIN P.C.B. FL2401 - pin 2
ADJ.	C-MAIN P.C.B. VR2401 (OFFSET)
SPEC.	DC voltage difference: 0 ± 10 mV

Procedures:

- (1) Short across pin 3 and pin 40 of IC2401.
- (2) Measure a difference in DC voltage applied between pin 41 of IC2401 and pin 2 of FL2401. Adjust VR2401 so that this voltage difference will be 0 ± 10 mV.

6-2 AF BPF adjustment

CHART	Siemens chart
MODE	Service mode 2
M. EQ.	Digital voltmeter
TP/TRIG.	C-MAIN P.C.B. IC2401 - pin 35 (ES)
ADJ.	ODA2 (data address)
SPEC.	DC voltage value minimized

Procedures:

- (1) Shoot the Siemens chart and bring its pattern image into focus manually.
- (2) Select data address 'ODA2', and change data so that a DC voltage appearing at pin 35 of IC2401 will be minimized.

* Note: After this adjustment, be sure to carry out adjustment items 6-3 and 6-4 (AF ES take-in, CZ adjustments).

6-3 AF ES take-in adjustment

CHART	Light box (5600°K)
MODE	Service mode 2
ADJ.	ODA3 (data address)
SPEC.	Only writing with the REC key. (automatic adjustment)

Procedures:

- (1) Shoot the light box, and defocus its image to maximum manually.
- (2) Select data address 'ODA3' and press the REC key.

6-4 CZ adjustment

CHART	CZ adjustment chart/Siemens chart
MODE	Service mode 3
M. EQ.	Monitor TV

CZ adjustment can be accomplished automatically just by pressing the AF ON/OFF key while observing data on the MONITOR TV.

Preparations:

- (1) Shortcircuit across TP2301 (IRIS) and TP2207 (+5V) on the C-MAIN P.C.B. (This step is not required if the indoor illumination is turned off.)
- (2) Provide a distance of 2.40 ± 0.02 m between the front lens and the test chart. (Use the Siemens chart only for focus checking and manual focusing. For other purposes, use the CZ adjustment chart.)
- (3) Select the service mode 3 (AF adjustment mode).

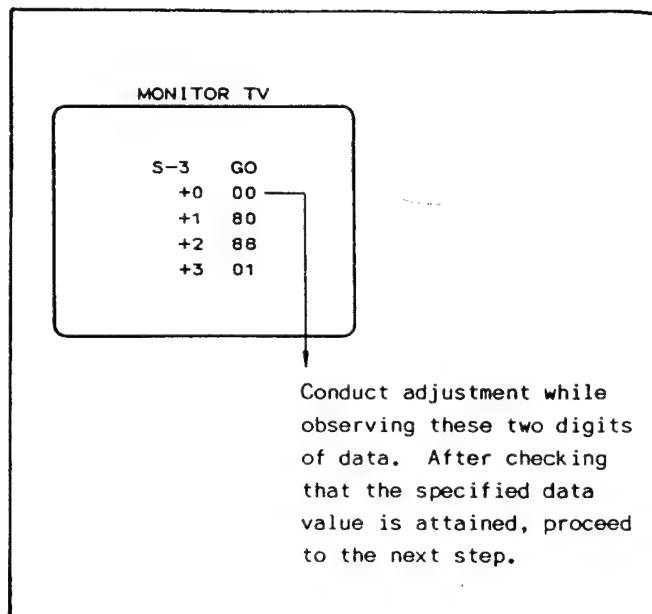


Fig. II-47

Procedures:

	Procedures	Data value on completion of each automatic adjustment
1	Press the REC key on the remote controller.	"C0"
2	Press the AF ON/OFF key. (Automatic zooming is performed to the telephoto end.)	"C0" or "40"
3	Readjust the angle of view, and press the AF ON/OFF key.	"C0"
4	Check whether the Siemens chart is in focus. If it is in focus, press the AF ON/OFF key. If the Siemens chart is out of focus, bring it into focus using the MANUAL FOCUS F/N key and then press the AF ON/OFF key.	"C0"
5	Press the AF ON/OFF key.	"A0"
6	Check whether the Siemens chart is in focus. If it is in focus, press the AF ON/OFF key. If the Siemens chart is out of focus, bring it into focus using the ZUUM T/W key and then press the AF ON/OFF key.	"C0"
7	Same as in step 4.	"C0"
8	Press the AF ON/OFF key.	"88" or "80"
9	Press the AF ON/OFF key.	"98"
10	Take the same procedure as in step 6, and wait for 10 sec (approx.). Then, check that the image is not defocused in zooming operation. If defocused, turn try adjustment again.	

* "40" is indicated if the image is focused in the telephoto end setting at the start of adjustment.

If "80" is indicated, go back to step 5.

CAMERA-MAIN P.C.B.

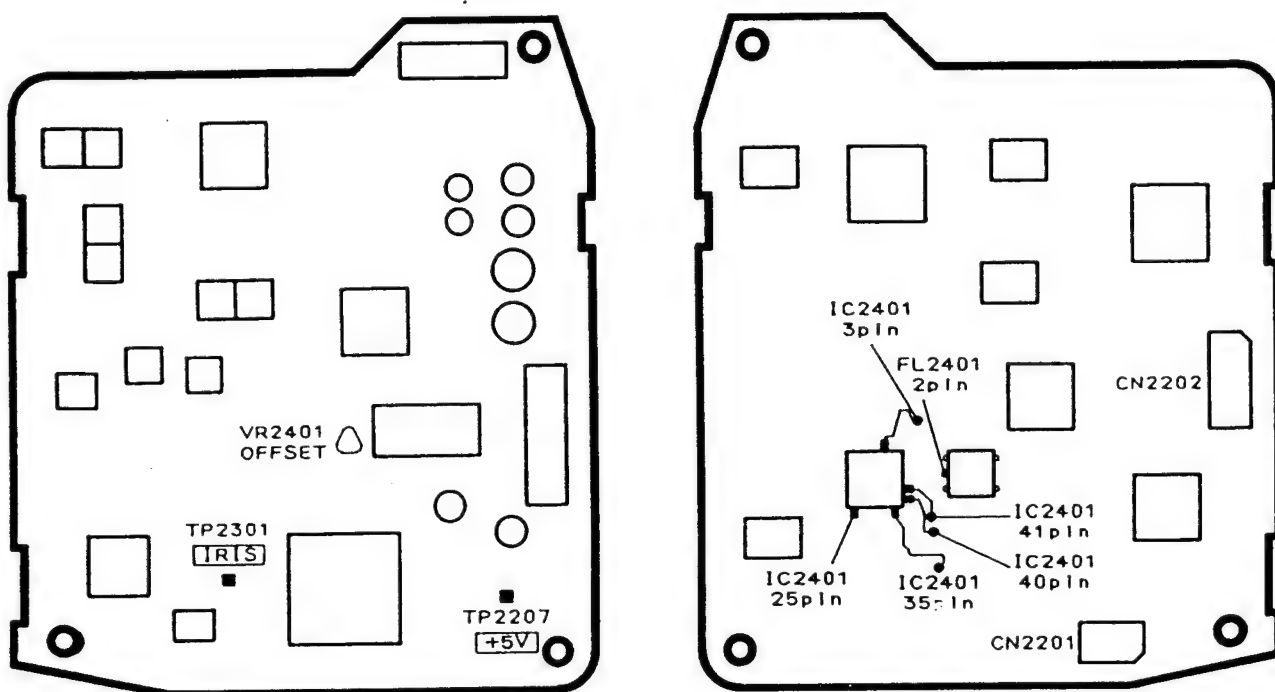


Fig. II-48

7. Electrical Adjustments of Recorder Section

* Note: Adjustments from 7-1 through 7-5 and 7-21 must be performed with the C-MAIN P.C.B. connected.

7-1 Switching frequency (power supply) adjustment

MODE	REC PAUSE
M. EQ.	Frequency counter Note: Connect the frequency counter through the oscilloscope.
TP/TRIG.	POWER SUPPLY P.C.B. Q1009 - pin 4
ADJ.	POWER SUPPLY P.C.B. VR1002 (PWM)
SPEC.	1.0 ± 0.02 MHz

* Note: Apply a voltage of 6.00 ± 0.002 V to the battery terminal.

7-2 +15.5 V adjustment

MODE	REC PAUSE
M. EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY P.C.B. CN1002 - pin 19
ADJ.	POWER SUPPLY P.C.B. VR1004 (+15.5V)
SPEC.	15.0 ± 0.2 VDC

* Note: Apply a voltage of 6.00 ± 0.02 V to the battery terminal.

7-3 VIDEO 5 V adjustment

MODE	REC PAUSE
M. EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY P.C.B. CN1002 - pin 4
ADJ.	POWER SUPPLY P.C.B. VR1001 (5V)
SPEC.	5.0 ± 0.1 VDC

* Note: Apply a voltage of 6.00 ± 0.02 V to the battery terminal.

7-4 CAMERA 5 V adjustment

MODE	REC PAUSE
M. EQ.	Digital voltmeter
TP/TRIG.	POWER SUPPLY P.C.B. CN1002 - pin 14
ADJ.	POWER SUPPLY P.C.B. VR1003 (CAM5V)
SPEC.	5.0 ± 0.1 VDC

7-5 Undercut/destination adjustment

MODE	REC PAUSE/Service mode 6
M. EQ.	Digital voltmeter
SPEC.	Only writing with the REC key (automatic adjustment)

Procedures:

- (1) Apply a voltage of 5.65 ± 0.05 V to the battery terminal.
- (2) Load the videocassette, and set up the REC PAUSE mode.
- (3) Press the COUNTER RESET key.
- (4) Reset the REC/PAUSE mode.
- (5) When the destination (TV System) data is other than "USA CRT", correct it to "USA CRT" by the tape return key.

7-6 Switching point adjustment

MODE	Color bar master (DY9-1062-000)
M. EQ.	PB
TP/TRIG.	VIDEO OUT R-MAIN P.C.B. CN309 - pin 6
ADJ.	R-MAIN P.C.B. VR301 (SWP)
SPEC.	7.0 ± 1 H

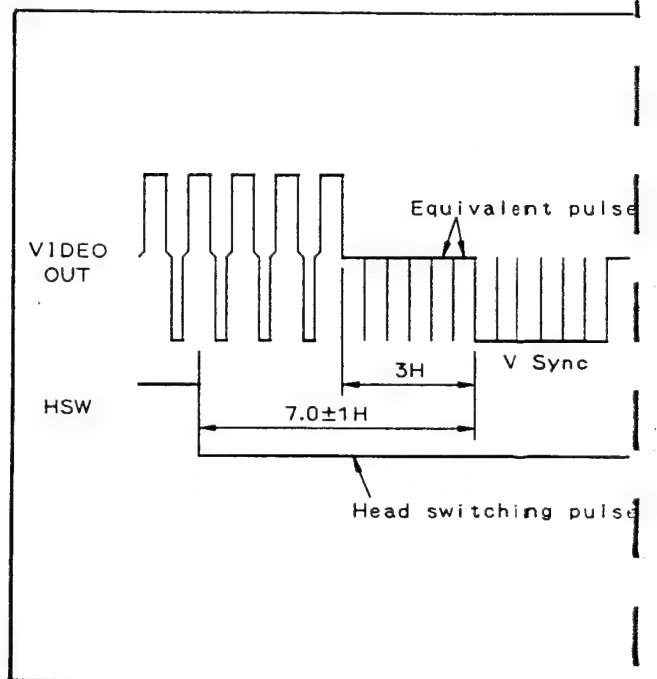


Fig. II-49

7 Jitter error bias adjustment

MODE	PB
M. EQ.	Digital voltmeter
P/TRIG.	R-MAIN P.C.B. IC4302 - 8 pin
ADJ.	R-MAIN P.C.B. VR4302 (BIAS)
SPEC.	2.0 ± 0.1 VDC

7-8 Jitter error correction (UCS1A only)

MODE	PB
M. EQ.	Oscilloscope
P/TRIG.	R-MAIN P.C.B. IC4301 - 2 pin
ADJ.	R-MAIN P.C.B. VR4301 (J ERR)
SPEC.	1.6 ± 0.2 VDC

Note: After jitter error correction, make jitter error bias adjustment (see 7-7) to check for a jitter error bias. If any jitter error bias exists, make jitter error bias adjustment again.

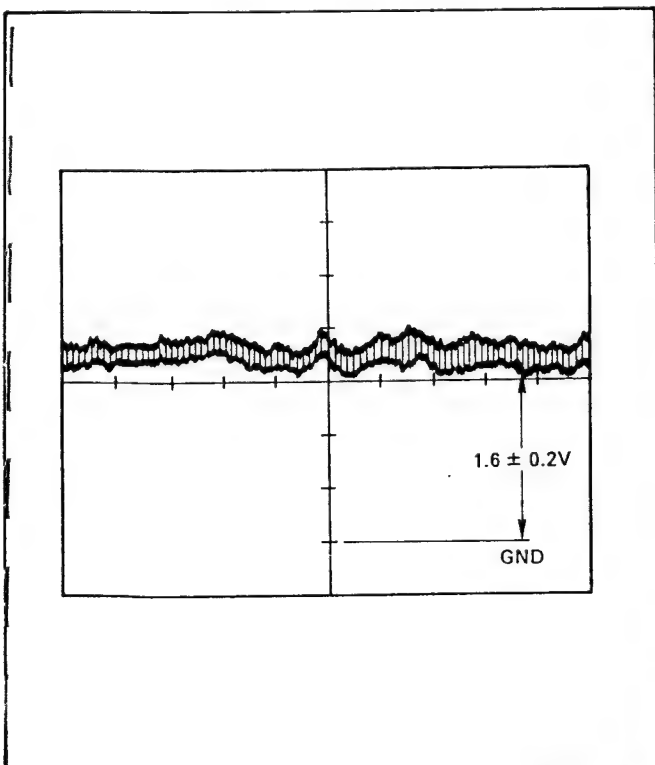


Fig. II-50

1 mS/50 mVDC

7-9 VIDEO AGC adjustment

SIGNAL	White 100% video signal
MODE	E-E
M. EQ.	Oscilloscope
TP/TRIG.	VIDEO OUT (75 Ω terminated)
ADJ.	R-MAIN P.C.B. VR607 (AGC)
SPEC.	1.00 ± 0.04 Vp-p

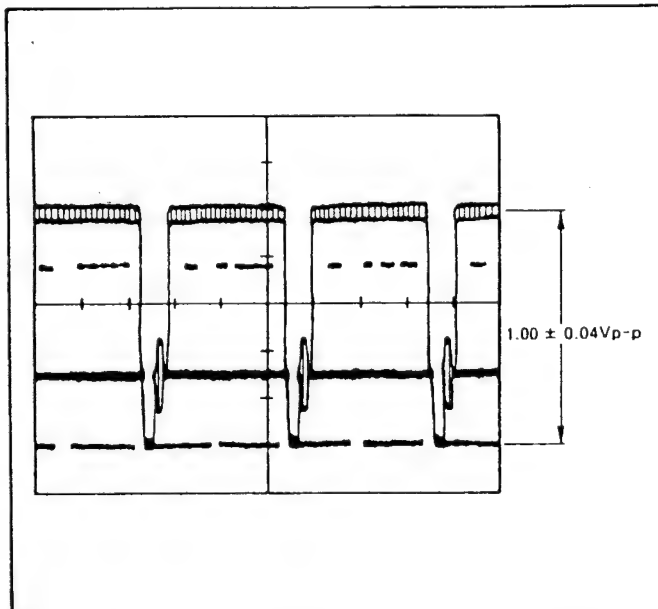


Fig. II-51

20 μ sec/20 mV

7-10 REC Y level adjustment

SIGNAL	White 100% video signal
MODE	E-E
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. IC604 - pin 3
ADJ.	R-MAIN P.C.B. VR617
SPEC.	0.50 ± 0.02 Vp-p

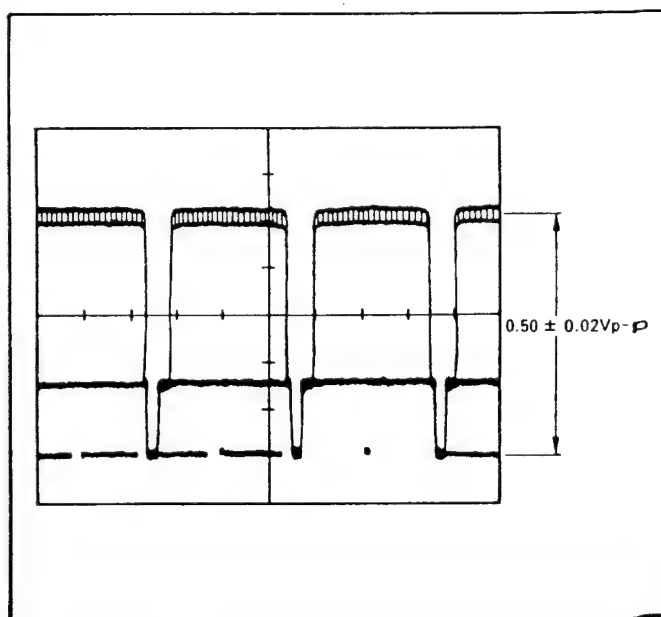


Fig. II-52

20 μ sec/10 mV

7-11 Y FM carrier (normal) adjustment

SIGNAL	No signal (Option terminal)
MODE	Normal REC
M. EQ.	Frequency counter Note: Connected via an oscilloscope.
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR608 (N CAR)
SPEC.	4.38 ± 0.02 MHz

- * Notes:
1. Load a normal cassette tape.
 2. Only for the UCS1A, perform the Y FM carrier (Hi8) adjustment (7-13) after this adjustment.

7-12 Y FM deviation (normal) adjustment

SIGNAL	100% white video signal
MODE	Normal REC
M. EQ.	Oscilloscope
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR612 (N DEV)
SPEC.	$0.19 \mu\text{sec}/1$ cycle

- * Notes:
1. Load normal tape.
 2. Observe the video signal at the point where it has the shortest cycle.
 3. Only for the UCS1A, perform the Y FM deviation (Hi8) adjustment (7-14) after this adjustment.

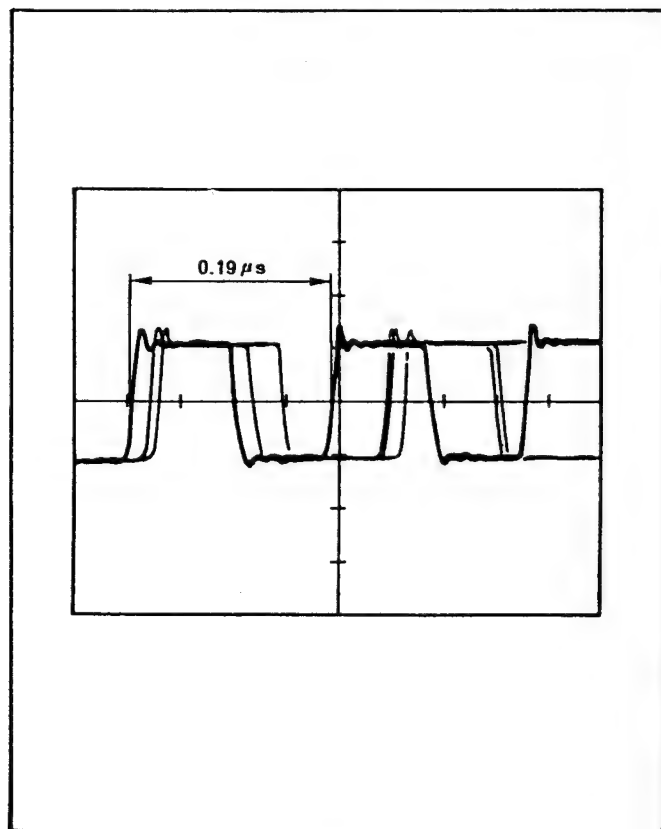


Fig. II-53

50 nS/5 mV

7-13 Y FM carrier (Hi8) adjustment

SIGNAL	No signal
MODE	Hi8REC
M. EQ.	Frequency counter Note: Connected via an oscilloscope.
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR609 (H CAR)
SPEC.	5.99 ± 0.02 MHz

- * Notes:
1. Load Hi8ME tape.
 2. Connect an oscilloscope.
 3. Before the adjustment, perform the Y FM carrier (normal) adjustment (7-11).

7-14 Y FM deviation (Hi8) adjustment

SIGNAL	100% white video signal
MODE	Hi8REC
M. EQ.	Oscilloscope
TP/TRIG.	VS P.C.B. IC604 - 43 pin
ADJ.	VS P.C.B. VR613 (H DEV)
SPEC.	$0.3975 \mu\text{sec}/3$ cycle

- * Notes:
1. Load Hi8ME tape.
 2. Observe the video signal having the shortest cycle.
 3. Before the adjustment, perform the Y FM deviation (normal) adjustment (7-12).

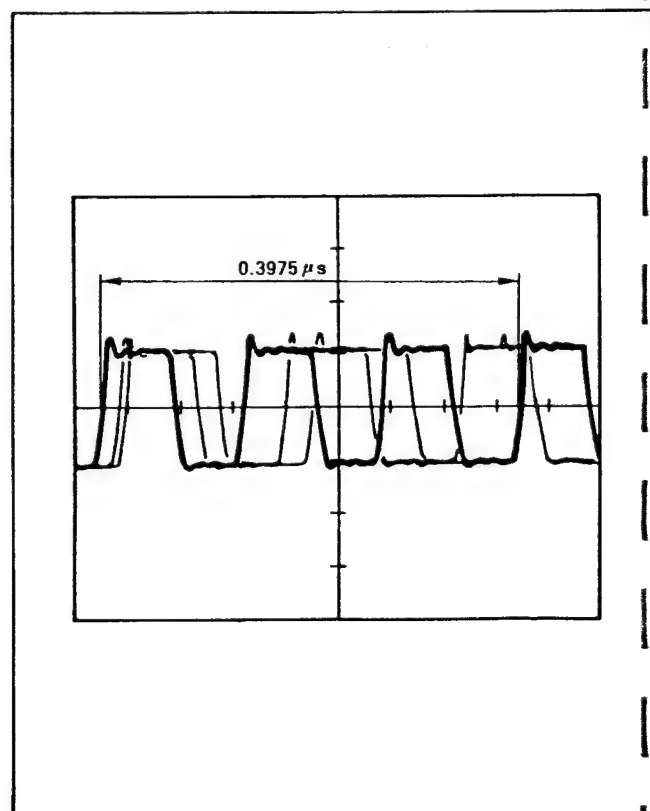


Fig. II-54

-15 Recording current Y adjustment

SIGNAL	No signal
MODE	REC
A. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. Q628-E
ADJ.	R-MAIN P.C.B. VR606 (Y CUR)
SPEC.	320 ± 10 mV

* Note: Load Hi8ME tape.

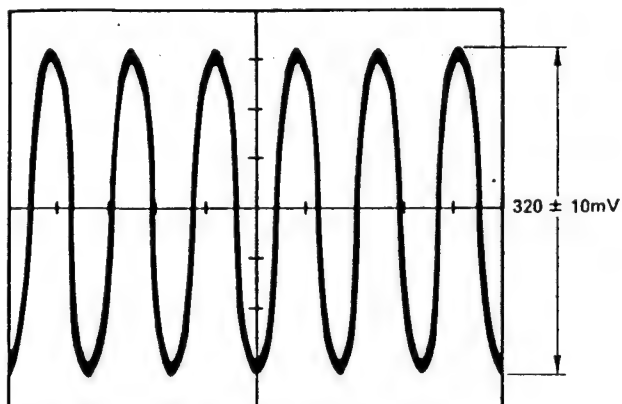


Fig. II-55 5 μ sec/5 mV

7-17 Recording current ATF adjustment

SIGNAL	Red raster signal
MODE	REC (LINE IN)
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. VR602 - pin 3
ADJ.	R-MAIN P.C.B. VR602 (ATF)
SPEC.	210 ± 10 mVp-p

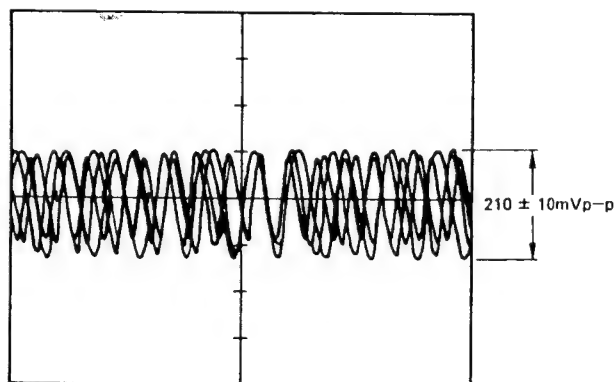


Fig. II-57 10 μ sec/10 mV

-16 Recording current AUDIO adjustment

SIGNAL	Red raster signal
MODE	REC
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. VR603 - pin 3
ADJ.	R-MAIN P.C.B. VR603 (AFM CUR)
SPEC.	140 ± 10 mVp-p

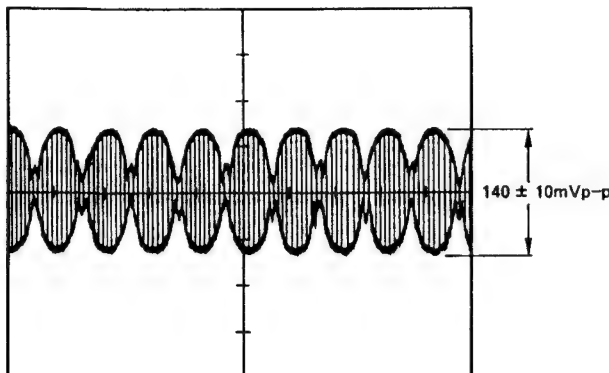


Fig. II-56

7-18 Recording current C adjustment

SIGNAL	Red raster signal
MODE	REC (LINE IN)
M. EQ.	Oscilloscope (1:1)
TP/TRIG.	R-MAIN P.C.B. Q617 - pin 5 (CH-1) R-MAIN P.C.B. Q617 - pin 6 (CH-2) R-MAIN P.C.B. Q609 - pin 5 (CH-3) R-MAIN P.C.B. Q609 - pin 6 (CH-4) R-MAIN P.C.B. IC4102 - pin 97 (1/2 SWP) R-MAIN P.C.B. FL608 - pin 6
ADJ.	R-MAIN P.C.B. VR605 (CH-1) R-MAIN P.C.B. VR604 (CH-2) R-MAIN P.C.B. VR601 (CH-3) R-MAIN P.C.B. VR600 (CH-4)
SPEC.	100 ± 2 mVp-p

* Note: Before performing this adjustment, adjust the pattern generator so that the Vp-p ratio between the burst signal and the color signal is 1:2.5.

Procedures:

- (1) With the red raster signal applied in the REC mode, adjust a p-p value on each of channels Q617 - pin 5, Q617 - pin 6, Q609 - pin 5, Q609 - pin 6 so that it will be 100 mVp-p. (Preadjustment)
- (2) With the red raster signal applied in the REC/PB mode, conduct observation at pin 6 of FL608. Check for p-p value variation among channels.
- (3) It is OK'd if the variation ratio of the smallest p-p value to the largest p-p value is within a range of 1:1.3. If this condition is not satisfied, go back to step (1) and retry preadjustment for averaging variation.
- (4) Repeat steps (2) through (3) to eliminate variation among channels in playback.

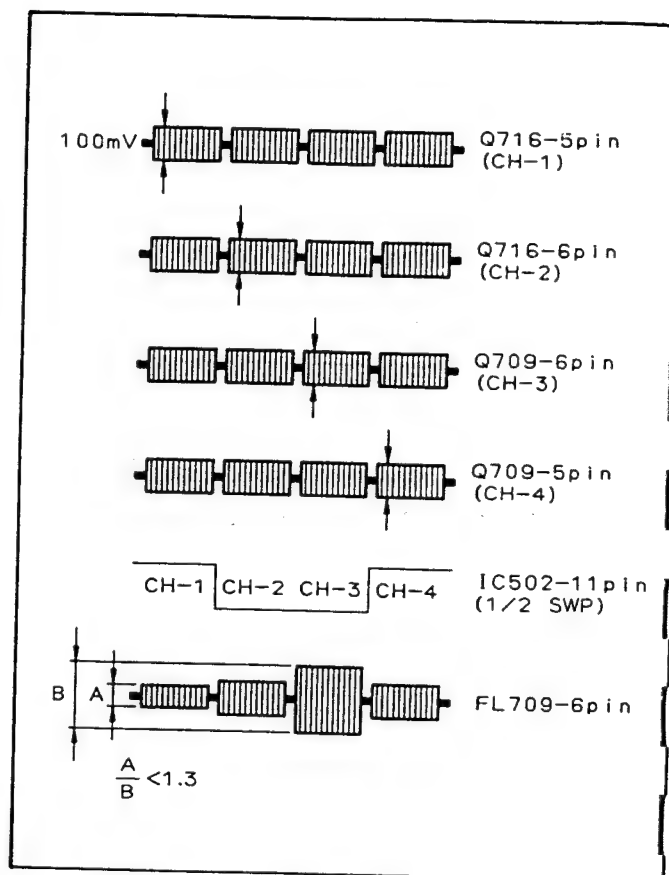


Fig. II-58

7-19 PB Y1 level adjustment

SIGNAL	Color bar master
MODE	PB
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. IC604 - pin 15
ADJ.	R-MAIN P.C.B. VR610 (PBY)
SPEC.	0.50 ± 0.02 Vp-p

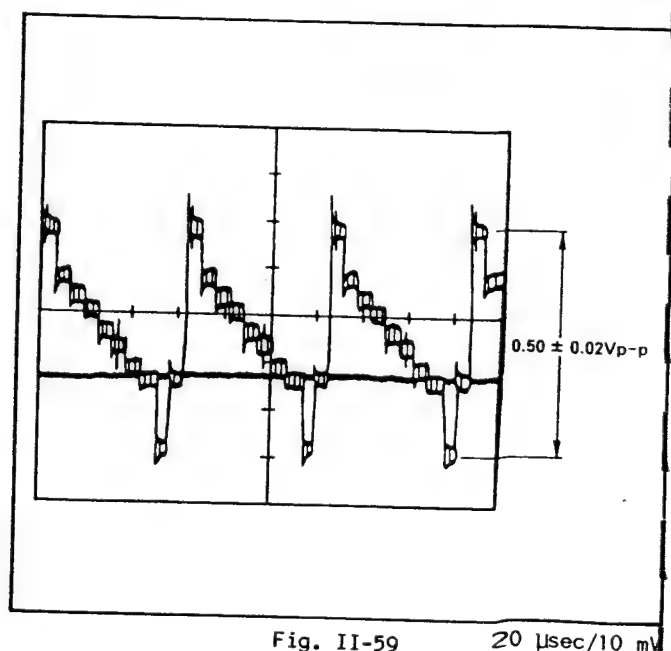


Fig. II-59

20 μsec/10 mV

7-20 PB Y2 level adjustment

SIGNAL	Color bar signal
MODE	PB
EQ.	Oscilloscope
TP/TRIG.	VIDEO OUT (75-ohm termination)
ADJ.	R-MAIN P.C.B. VR615 (PB)
EC.	1.00 ± 0.04 Vp-p

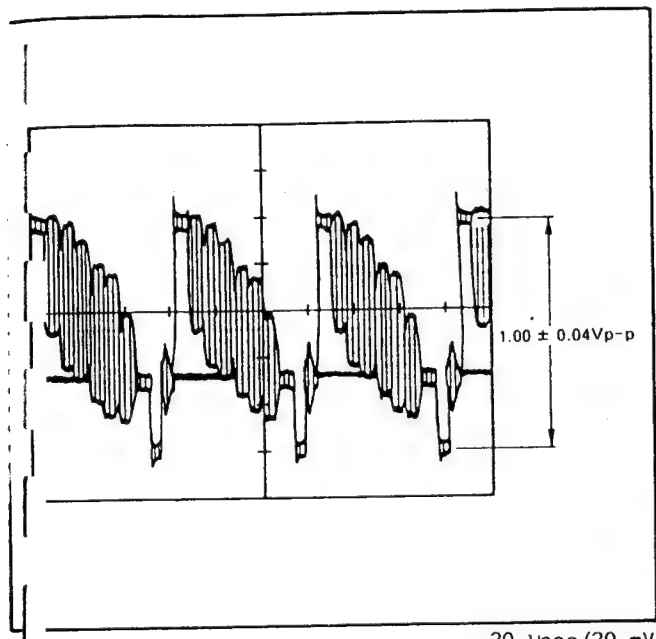


Fig. II-60

20 μsec/20 mV

7-22 JOG chrominance phase adjustment

SIGNAL	Color bar signal (REC/PB)
MODE	SEARCH
M. EQ.	Monitor TV
ADJ.	R-MAIN P.C.B. VR616 (JOG BURST)
SPEC.	Reduce black noise bar appearing under each white noise bar as possible.

7-23 Playback peaking adjustment

SIGNAL	V sweep master signal
MODE	PB
M. EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. Q602-E/ R-MAIN P.C.B. IC4102 - pin 97
ADJ.	R-MAIN P.C.B. VR504 (CH-1), VR501 (CH-2), VR502 (CH-3), VR503 (CH-4)
SPEC.	$\frac{V8.5}{V4.5} = \frac{2}{3}$

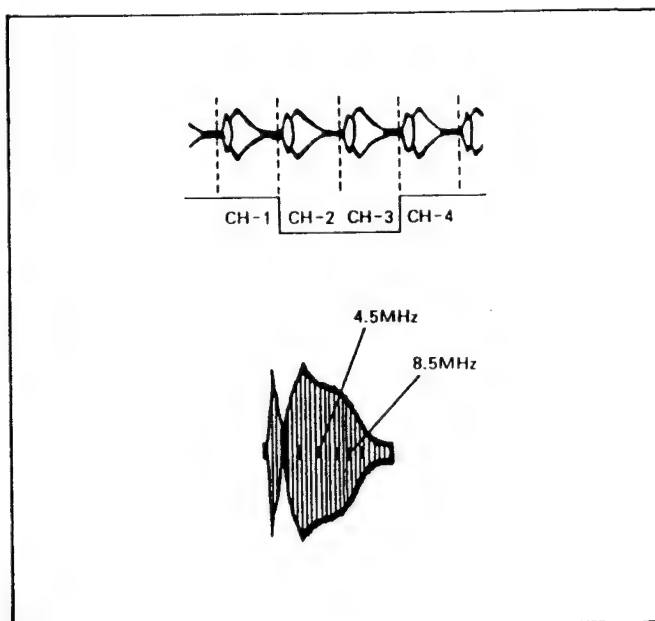


Fig. II-62

7-21 Y/C separation adjustment

SIGNAL	Color bar signal
MODE	PB
EQ.	Oscilloscope
TP/TRIG.	R-MAIN P.C.B. IC604 - 11 pin
ADJ.	R-MAIN P.C.B. VR611 R-MAIN P.C.B. VR614
SPEC.	Chroma component minimized

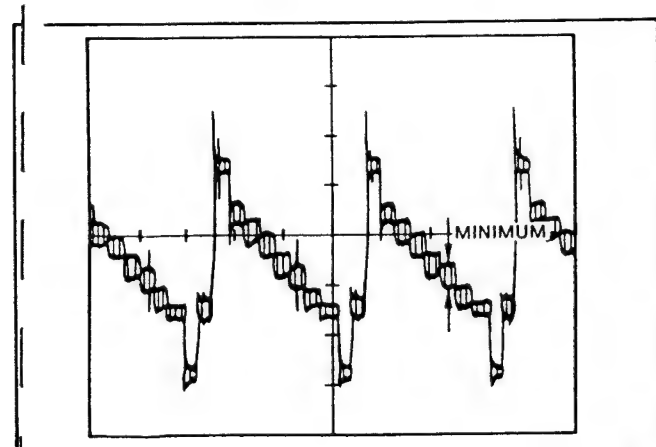


Fig. II-61

20 μsec/10 mV

7-24 Generated character position adjustment

SIGNAL	Color bar singal
MODE	E-E (Service mode 4)
M. EQ.	Monitor TV
ADJ.	R-MAIN P.C.B. VC4101 (CG)
SPEC.	The rightmost character of counter should be positioned at the boundary of red and blue.

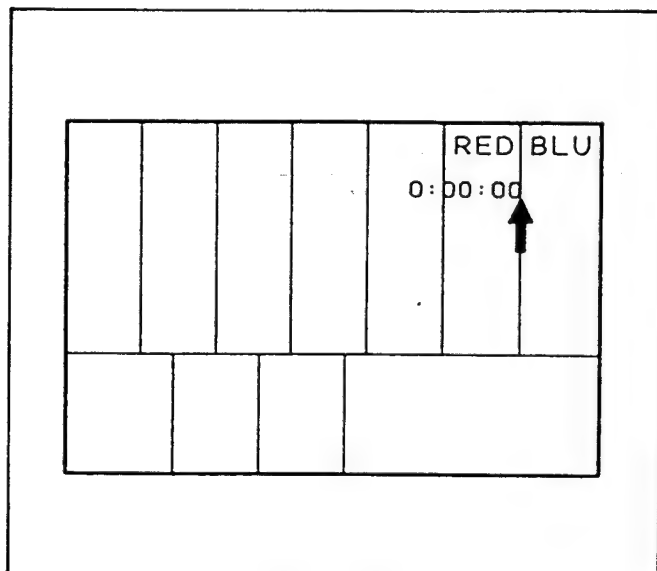


Fig. II-63

7-25 fo (AUDIO) adjustment

SIGNAL	Standard tape (STEREO) DY9-1291-000
MODE	PB
M. EQ.	Oscilloscope
TP/TRIG.	AUDIO P.C.B. IC101 - pin 6, pin 44 (Lch) AUDIO P.C.B. IC102 - pin 6, pin 44 (Rch)
ADJ.	AUDIO P.C.B. VR101 (Lch) AUDIO P.C.B. VR102 (Rch)
SPEC.	0V

Procedures:

- (1) Play back a standard tape (stereo).
- (2) Monitor the play back sound and observe the potential difference between AUDIO P.C.B. IC101 - pin 6 and pin 44.
- (3) Adjust VR101 in such a way that the play back sound is normal (there is no howling sound, etc.) and that there is no potential difference.
- (4) Observe AUDIO P.C.B. VR102 - pin 6 and pin 44 in the same manner as in 2 and 3, and then adjust them with VR102.

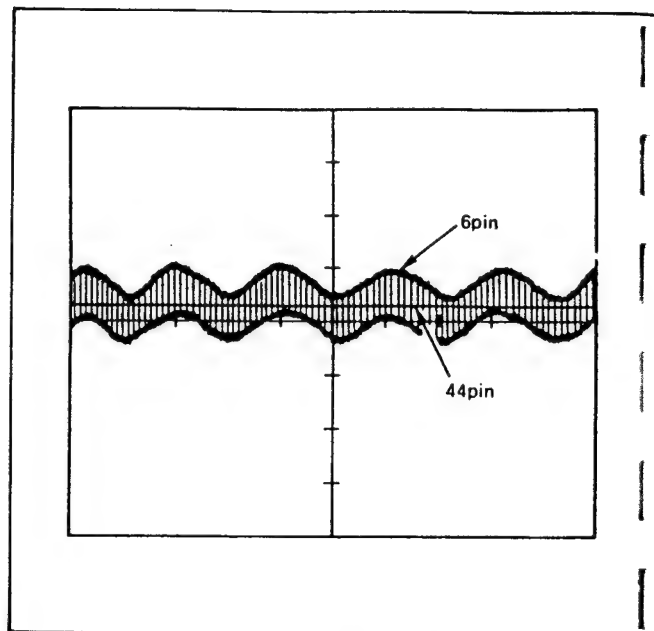


Fig. II-64

7-26 Deviation (AUDIO) adjustment

SIGNAL	Standard tape (STEREO) DY9-1291-000
MODE	PB
M. EQ.	AC voltmeter
TP/TRIG.	Stereo line terminal
ADJ.	R-MAIN P.C.B. VR103 (L DEV), VR104 (R DEV)
SPEC.	-10 \pm 0.5 dB

- * Notes:
1. Be sure to do this by always inserting a pin into the Rch terminal.
 2. Before the adjustment, perform the fo (AUDIO) adjustment (7-24).

POWER SUPPLY P.C.B.

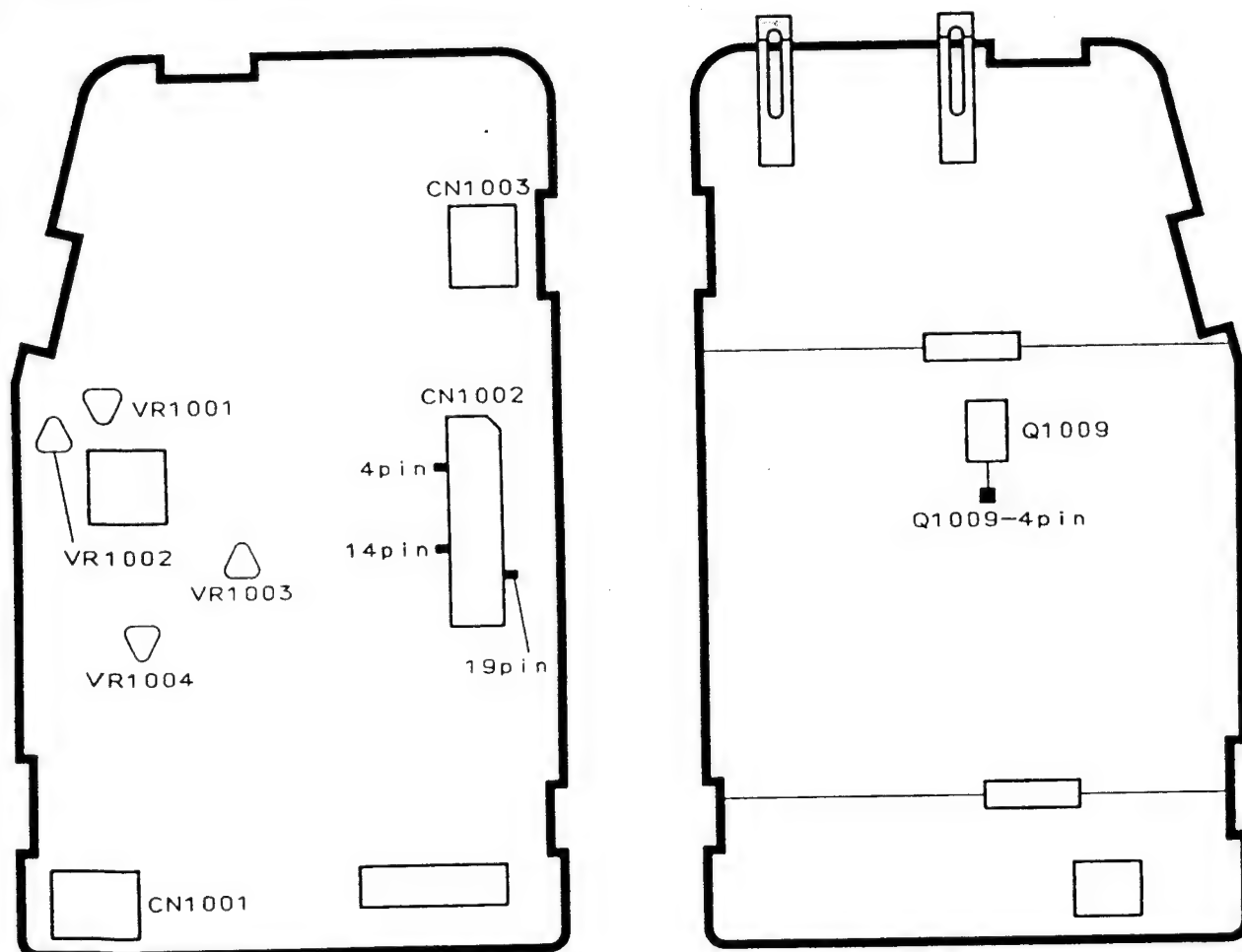
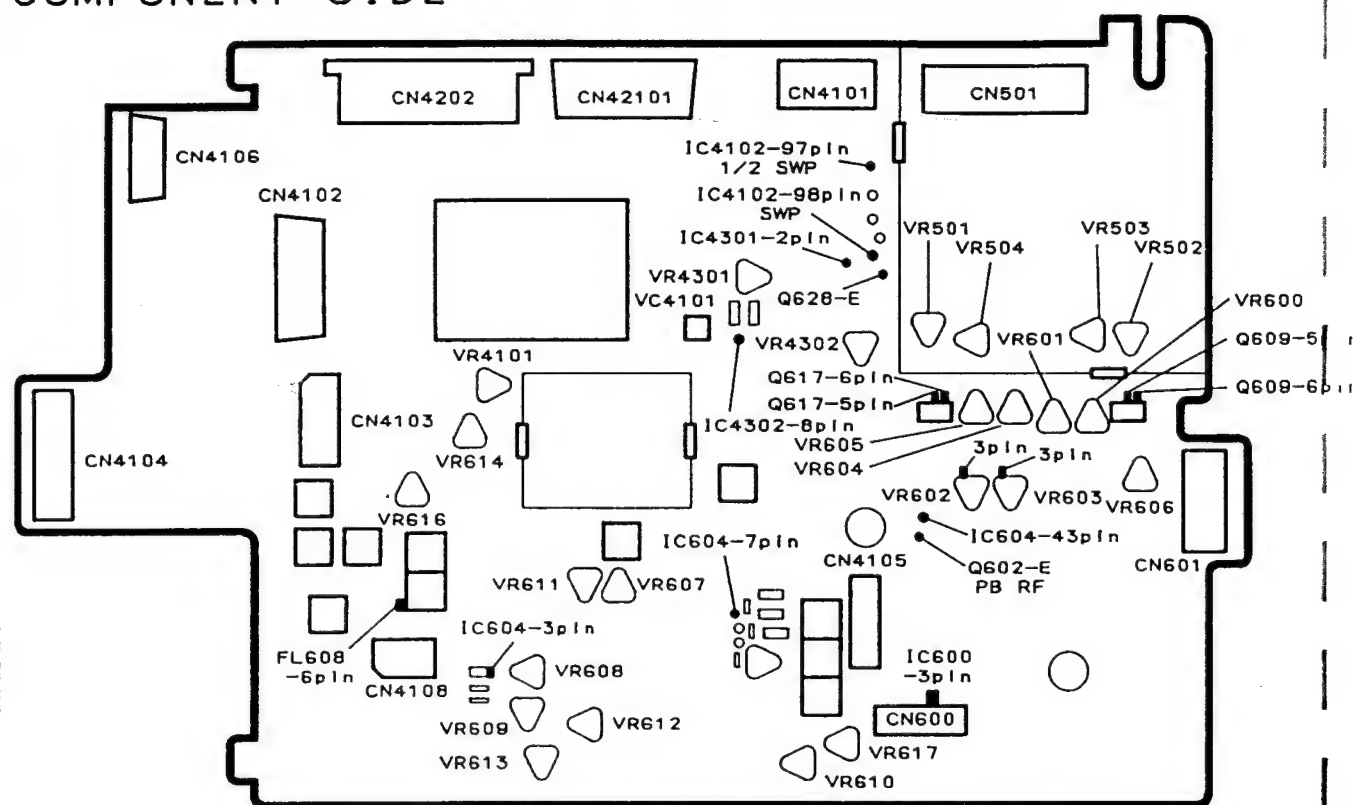


Fig. II-65

RECORDER-MAIN P.C.B. COMPONENT SIDE



SOLDERING SIDE

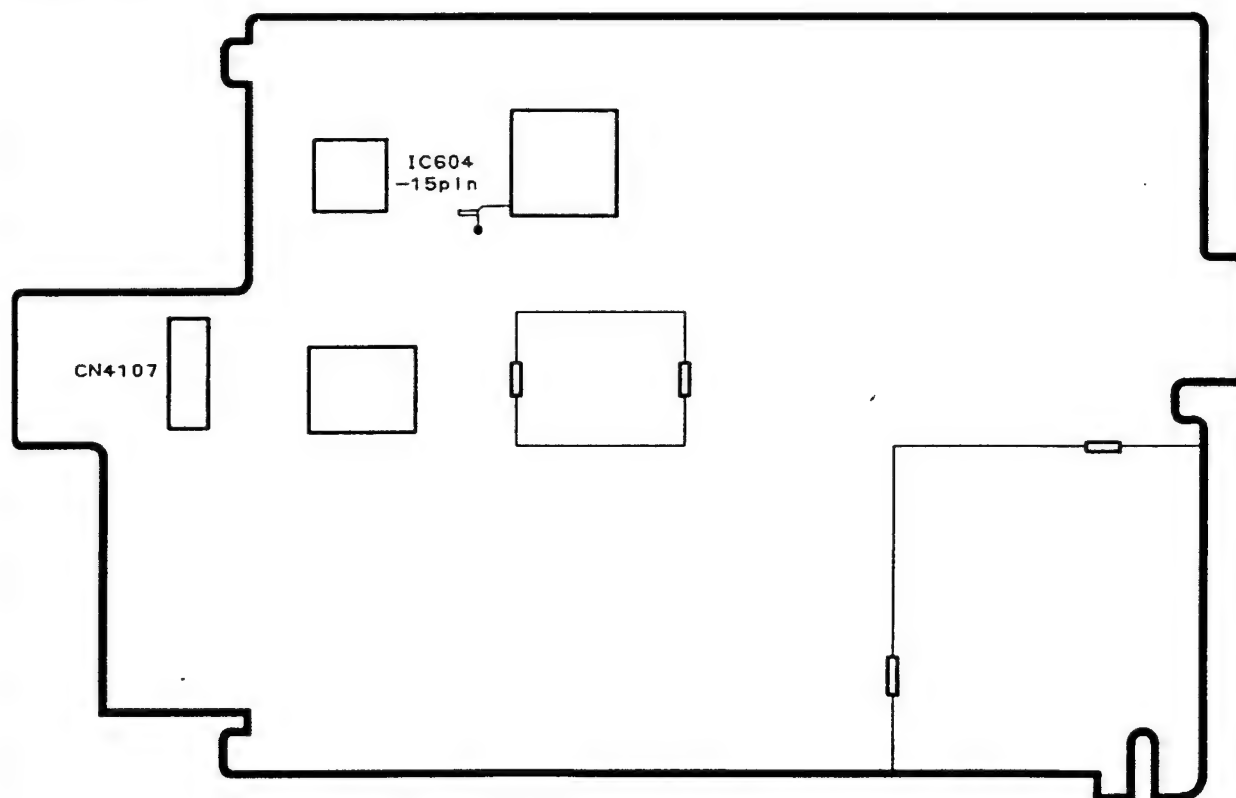


Fig. II-66

AUDIO P.C.B. COMPONENT SIDE

SOLDERING SIDE

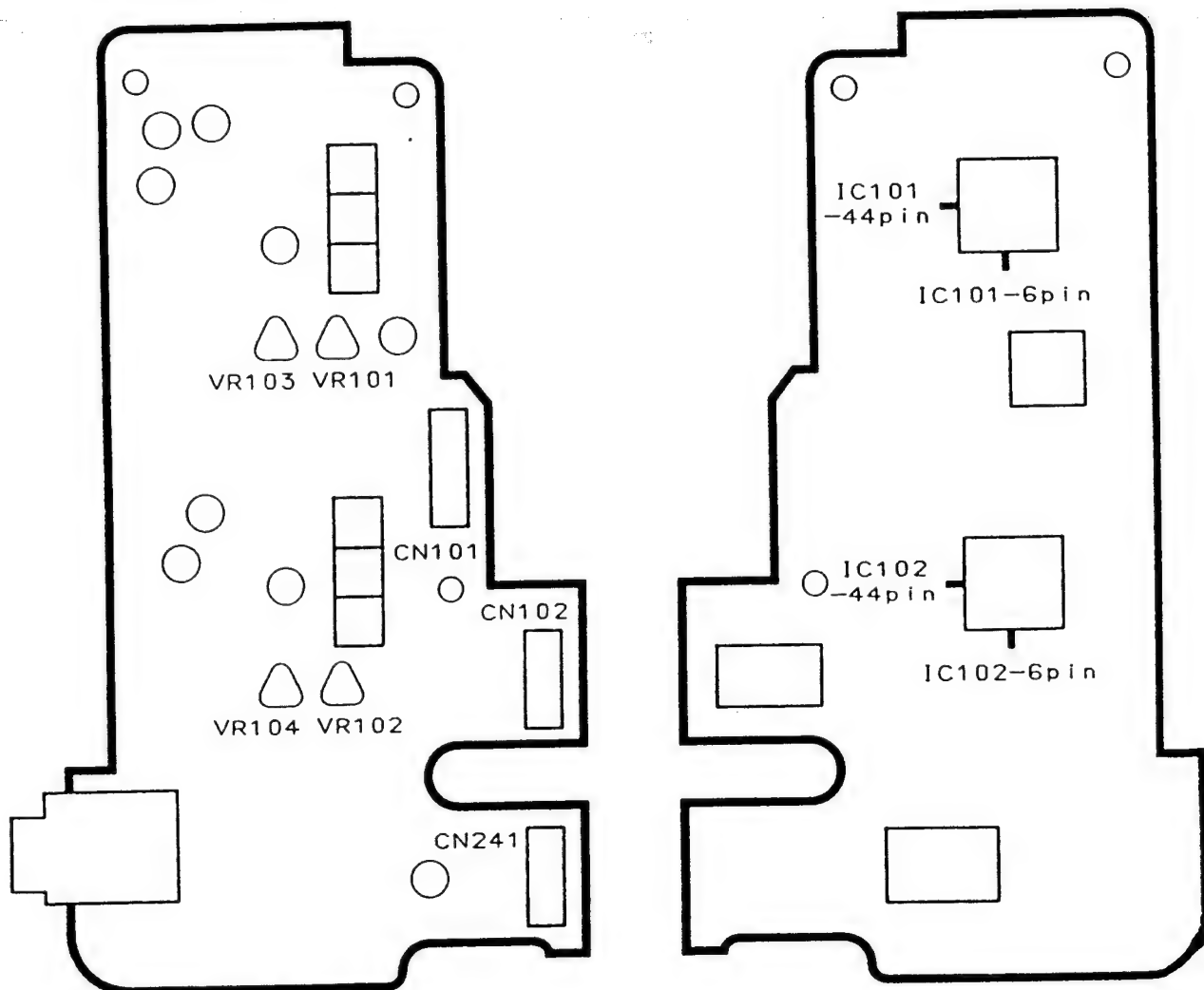


Fig. II-67

8. Adjustments of Electronic Viewfinder

8-1 Free-run frequency adjustment

SIGNAL	No signal (terminal opened)
MODE	Service mode 4 (LINE IN)
M. EQ.	Oscilloscope, frequency counter
TP/TRIG.	EVF P.C.B. TP2916 (HD)
ADJ.	EVF P.C.B. VR2902 (H.PHASE)
SPEC.	16.2 ± 0.2 KHz

8-2 Vertical amplitude adjustment

SIGNAL	Round subject
MODE	E-E
M. EQ.	EVF, monitor TV
ADJ.	EVF P.C.B. VP2901 (V-SIZE)
SPEC.	Compare with monitor TV picture. Imaging should be consistent.

Procedures:

- (1) Shoot a round subject (for examining vertical distortion) and adjust the angle of view over the entire screen.
- (2) Compare the EVF picture with the monitor TV picture.
Adjust VR2901 so that these pictures will be consistent.

8-3 Rotation and centering adjustment

MODE	E-E
M. EQ.	EVF
ADJ.	Deflection yoke, centering magnet
SPEC.	Picture aligned at center without tilting.

Procedures:

- (1) Shoot a subject that allows check of tilting/centering of picture.
 - (2) Loosen the fastening ring so that the deflection yoke can be rotated.
 - (3) Rotate the deflection yoke to correct tilting of picture.
- * Note: Tighten the centering magnet to such an extent that it will be just movable.
- (4) Adjust the centering magnet so that the picture will be centered.
 - (5) Tighten the fastening ring securely.
- * Note: Take care not to overtighten the fastening ring.
- (6) Fix the centering magnet by applying thread-lock paint or the like (at two points with 180° interval).

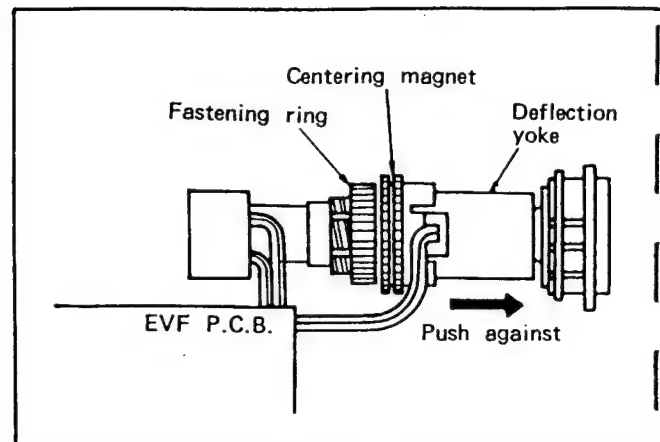


Fig. II-68

8-4 Brightness adjustment

SIGNAL	Self recording/playback tape (gray scale)
MODE	PLAY
M. EQ.	EVF
ADJ.	EVF P.C.B. VR2904 (BRIGHT)
SPEC.	Up to 11 levels of gray scale distinguishable.

8-5 Focus adjustment

MODE	Lens capped (character display)
M. EQ.	EVF
ADJ.	EVF P.C.B. VR2903 (FOCUS)
SPEC.	EVF character in the best focus.

8-6 Locations of TPs and VRs

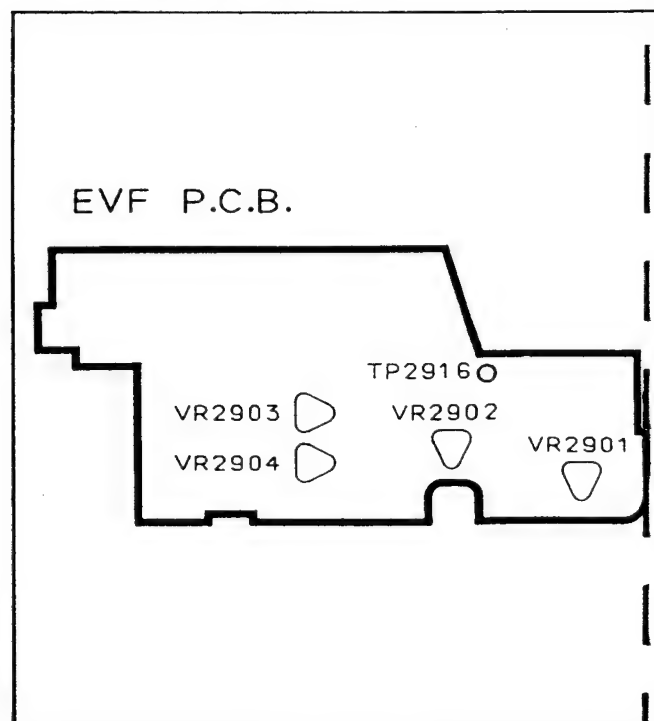
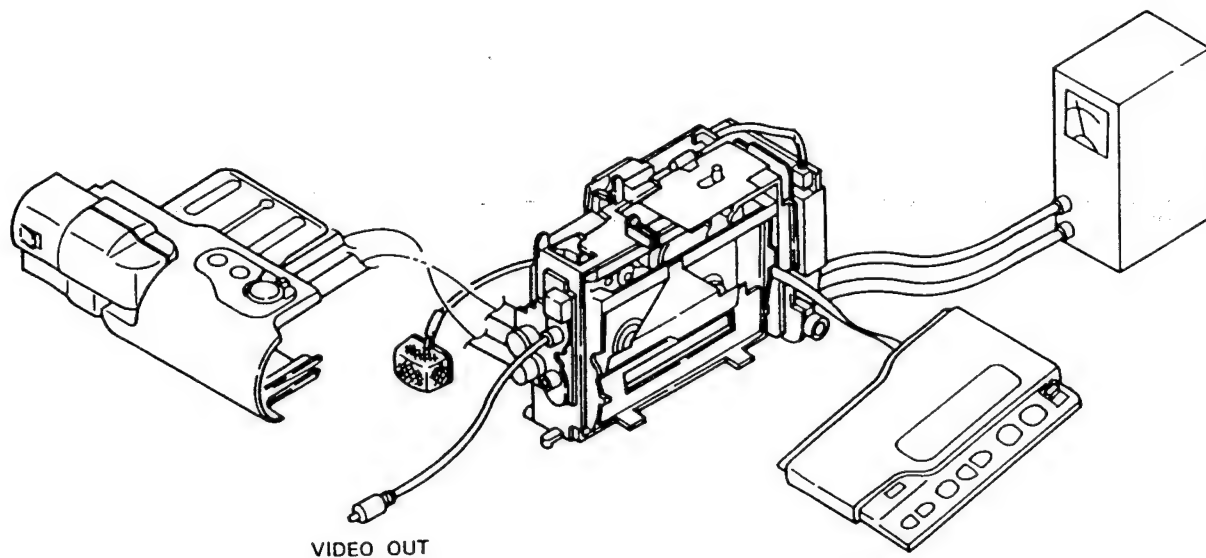


Fig. II-69

9. Adjustment of Recorder Mechanism

For adjusting the recorder mechanism, remove the lens unit as shown below. The tracking shift function is available in service mode 5. For details of the adjustment procedure, refer to the UC Mechanical Chassis Service Manual (DY8-3391-504-201).



RECORDER-MAIN P.C.B.

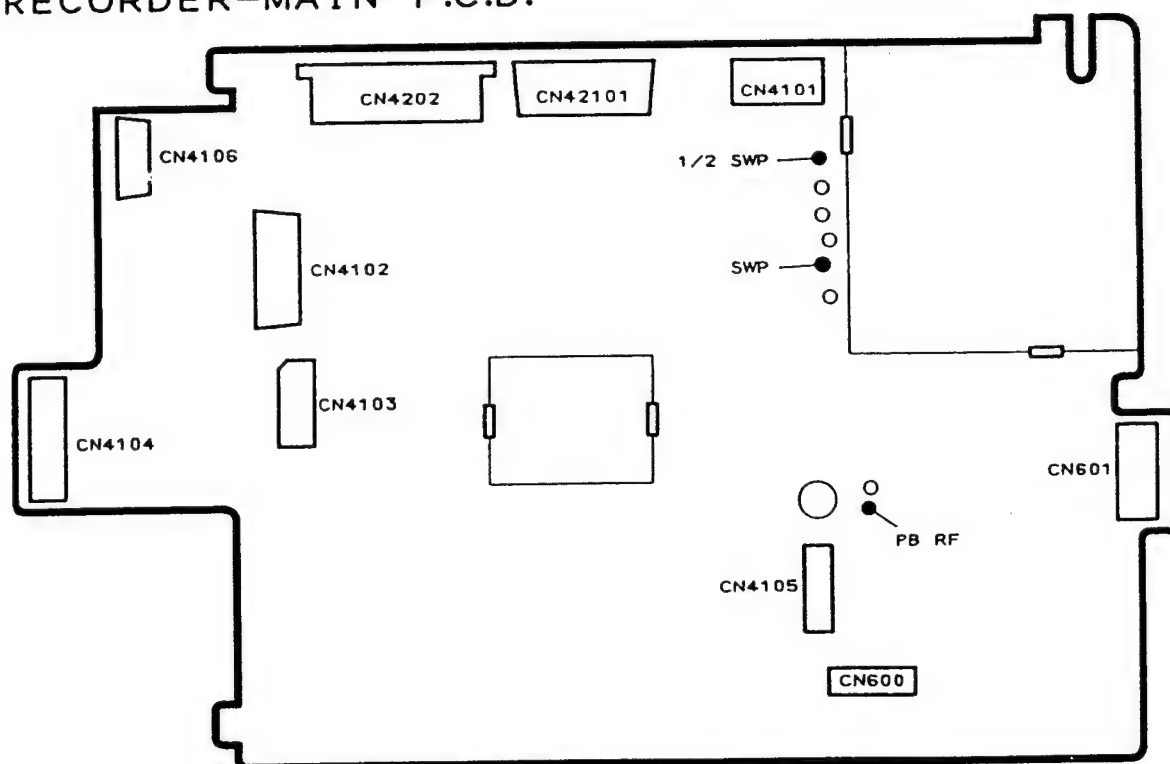


Fig. II-70

10. Checking and Adjusting Items after Replacing Main Parts

After replacing any main part, carry out adjustment referring to the table shown below. This table is presented for the purpose of reference indicating minimum necessary adjustment items to be taken after replacing any main part. Note that this table is not always applicable after replacement of multiple parts or in case of some trouble symptoms.

Table II-4 (1/2)

o : Adjust

Δ : Check

Replaced parts		LENS ASS'Y	CCD	C-MAIN P.C.B.	R-MAIN P.C.B.	POWER SUPPLY P.C.B.	CAMERA MI-COM.	MAIN MI-COM.	UPPER DRUM	E
No.	Adjustment									
5-1	Clock frequency			Δ						
5-2	PLL			Δ						
5-3	CCD reset		o	o			o			
5-4	CCD sub-voltage		o	o			o			
5-5	iris encoder	o					o			
5-6	Setup level		o	o			o			
5-7	Black level take-in		o	o			o			
5-8	Burst level			o			o			
5-9	White clip		o	o			o			
5-10	Iris		o	o			o			
5-11	AGC		o	o			o			
5-12	Aperture		o	o			o			
5-13	Y level		o	o			o			
5-14	Color difference simultaneity		o	o			o			
5-15	Preset white		o	o			o			
5-16	Color balance		o	o			o			
5-17	White balance 5200		o	o			o			
5-18	White balance 3200		o	o			o			
5-19	White level take-in 3200		o	o			o			
5-20	White level take-in 5600		o	o			o			
6-1	Offset			o						
6-2	AF BPF			o			o			
6-3	AF ES take-in			o			o			
6-4	CZ	o		o			o			

Table II-4 (2/2)

o : Adjust

Δ : Check


Replaced parts		LENS ASS'Y	CCD	C-MAIN P.C.B.	R-MAIN P.C.B.	POWER SUPPLY P.C.B.	CAMERA MI-COM.	MAIN MI-COM.	UPPER DRUM	EVF
No.	Adjustment									
7-1	Switching frequency (power supply)					Δ				
7-2	+15.5V					Δ				
7-3	VIDEO 5V					Δ				
7-4	CAMERA 5V					Δ				
7-5	Undercut (setting for destination)			o			o			
7-6	Switching point				Δ					
7-7	Jitter error bias				Δ					
7-8	Jitter error				Δ					
7-9	VIDEO AGC				Δ					
7-10	REC Y level				Δ					
7-11	Y FM carrier				Δ					
7-12	Y FM deviation				Δ					
7-13	Y FM carrier (Hi8)				Δ					
7-14	Y FM deviation (Hi8)				Δ					
7-15	Recording current Y				Δ				o	
7-16	Recording current AUDIO				Δ				o	
7-17	Recording current ATF				Δ				o	
7-18	Recording current C				Δ				o	
7-19	PB Y1 level				Δ				o	
7-20	PB Y2 level				Δ				o	
7-21	Y/C separation				Δ					
7-22	JOG chrominance phase				Δ					
7-23	Playback peaking				Δ				o	
7-24	Generated character position				Δ					
7-25	fo (AUDIO)				Δ					
7-26	Deviation (AUDIO)				Δ					
8-1	Free-run frequency									Δ
8-2	Vertical amplitude									Δ
8-3	Rotation and centering									Δ
8-4	Brightness									Δ
8-5	Focus									Δ

CONTENTS

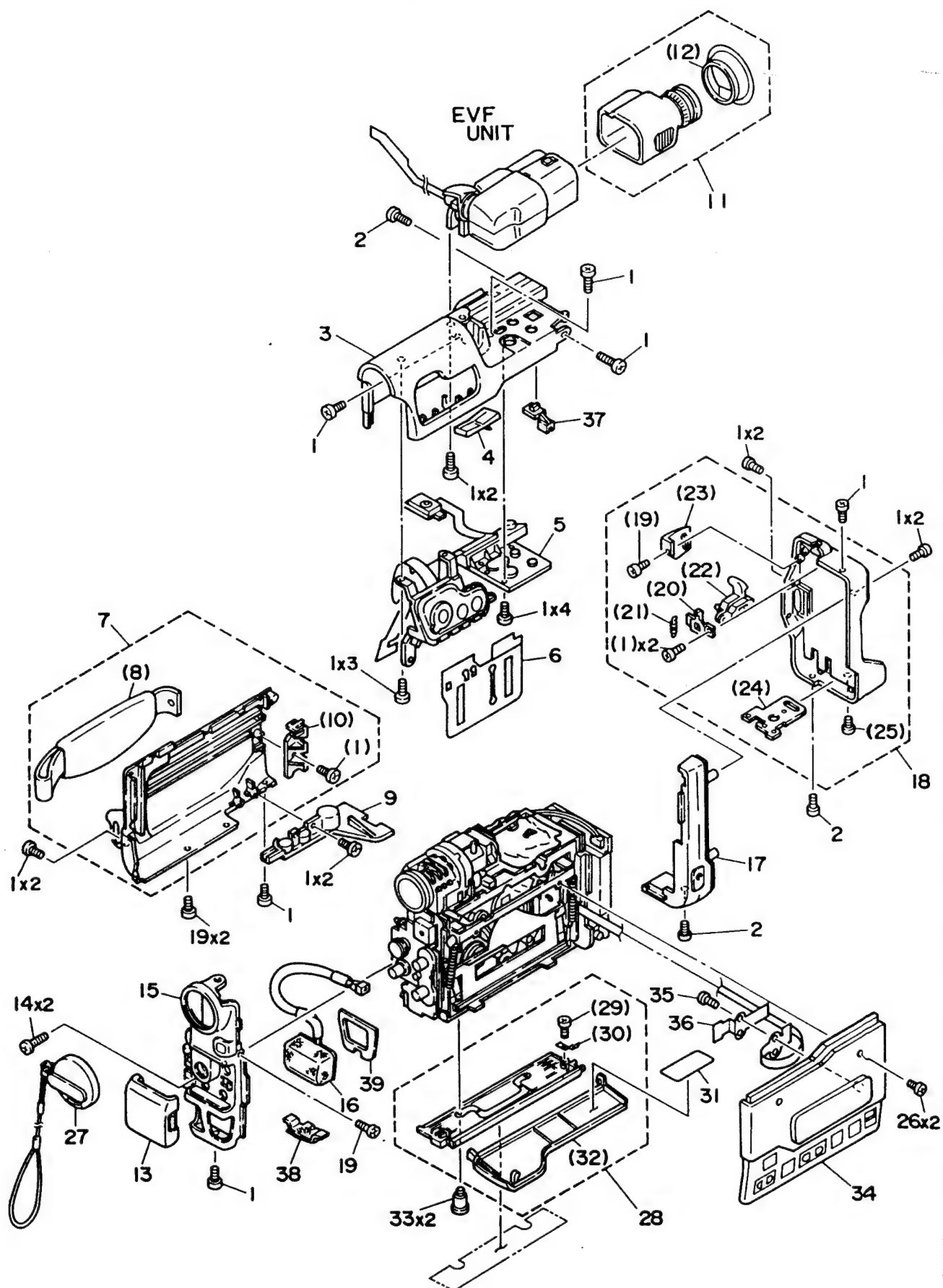
EXPLODED VIEWS

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CAUTION

1. ESPECIALLY CRITICAL PARTS IN THE POWER CIRCUIT BLOCK SHOULD NOT BE REPLACED WITH OTHER MARKS.
CRITICAL PARTS ARE MARKED WITH  IN THIS ELECTRICAL PARTS LIST.
2. THE NUMBERS INDICATED ON THE CONNECTORS DO NOT CORRESPOND TO THE SYMBOL NUMBERS.
PLEASE CHECK THE CORRECT SYMBOL NUMBERS OF THE CONNECTORS ON THE INTERCONNECTION SCHEMATIC DIAGRAM.

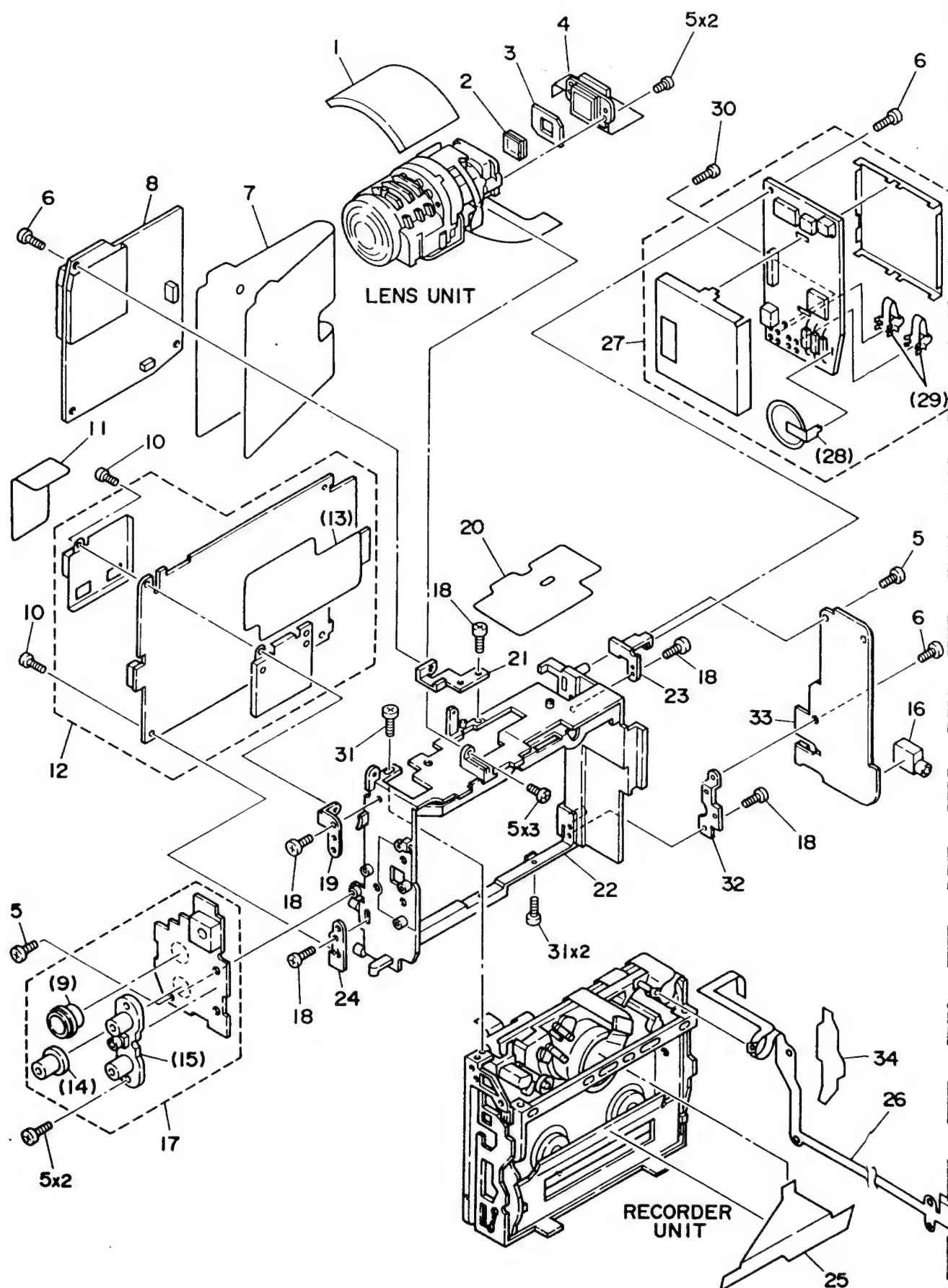
Casing Parts Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	XA4-9170-409 000	F	26	SCREW	
2	XA1-7170-309 000	F	3	SCREW	
3	DY1-7381-000 000	B	1	COVER, TOP	
4	DY1-7361-000 000	B	1	KNOB, T/W	
5	DG1-3105-000 000	C	1	P.C.B. ASS'Y, CAMERA KEY	
6	DA1-5927-000 000	C	1	COVER, DRUM (1)	
7	DY1-7384-000 000	B	1	COVER, LEFT	
8	DA1-5742-000 000	B	1	STRAP, HAND	
9	DY1-7389-000 000	B	1	SOCKET, TRIPOD	
10	DA1-5702-000 000	C	1	HOLDER, TRIGGER	
11	DG1-2174-000 000	B	1	FINDER ASS'Y	
12	DA1-5746-000 000	B	1	EVE CAP	
13	DA1-5907-000 000	B	1	COVER, AV	
14	XA4-9170-609 000	F	2	SCREW	
15	DG1-3100-000 000	B	1	COVER, FRONT	
16	DH9-0627-000 000	B	1	MICROPHONE ASS'Y	
17	DA1-5905-000 000	B	1	COVER, REAR (2)	
18	DG1-2172-000 000	B	1	COVER, REAR	
19	XA4-9170-509 000	F	4	SCREW	
20	DA1-5737-000 000	C	1	HOLDER, BATTERY EJECT KNOB	
21	DS1-5243-000 000	C	1	SPRING, COIL	
22	DA1-5736-000 000	C	1	KNOB, BATTERY EJECT	
23	DA1-5740-000 000	C	1	PLATE, STRAP(B) ATTACHMENT	
24	DA1-5739-000 000	C	1	PLATE, STRAP(A) ATTACHMENT	
25	XA1-7170-209 000	F	1	SCREW	
26	XA9-0645-000 000	F	2	SCREW	
27	DG1-2177-000 000	B	1	CAP, LENS	
28	DG1-2176-000 000	B	1	COVER, LS	
29	XA4-9170-359 000	F	1	SCREW	
30	DA1-5756-000 000	B	1	SPRING, PLATE	
31	DA1-5779-000 000	B	1	SEAL, LS COVER	
32	DA1-5705-000 000	B	1	COVER, LS	
33	DA1-4009-000 000	F	2	SCREW	
34	DG1-3111-000 000	B	1	COVER, CASSETTE	
35	XA4-9170-229 000	F	1	SCREW	
36	DA1-5706-000 000	C	1	HOLDER, FLXBLE	
37	DA1-5923-000 000	B	1	KNOB, SWITCH	
38	DA1-5935-000 000	C	1	COVER, MICROPHONE	
39	DA1-5912-000 000	C	1	SHEET, RUBBER	

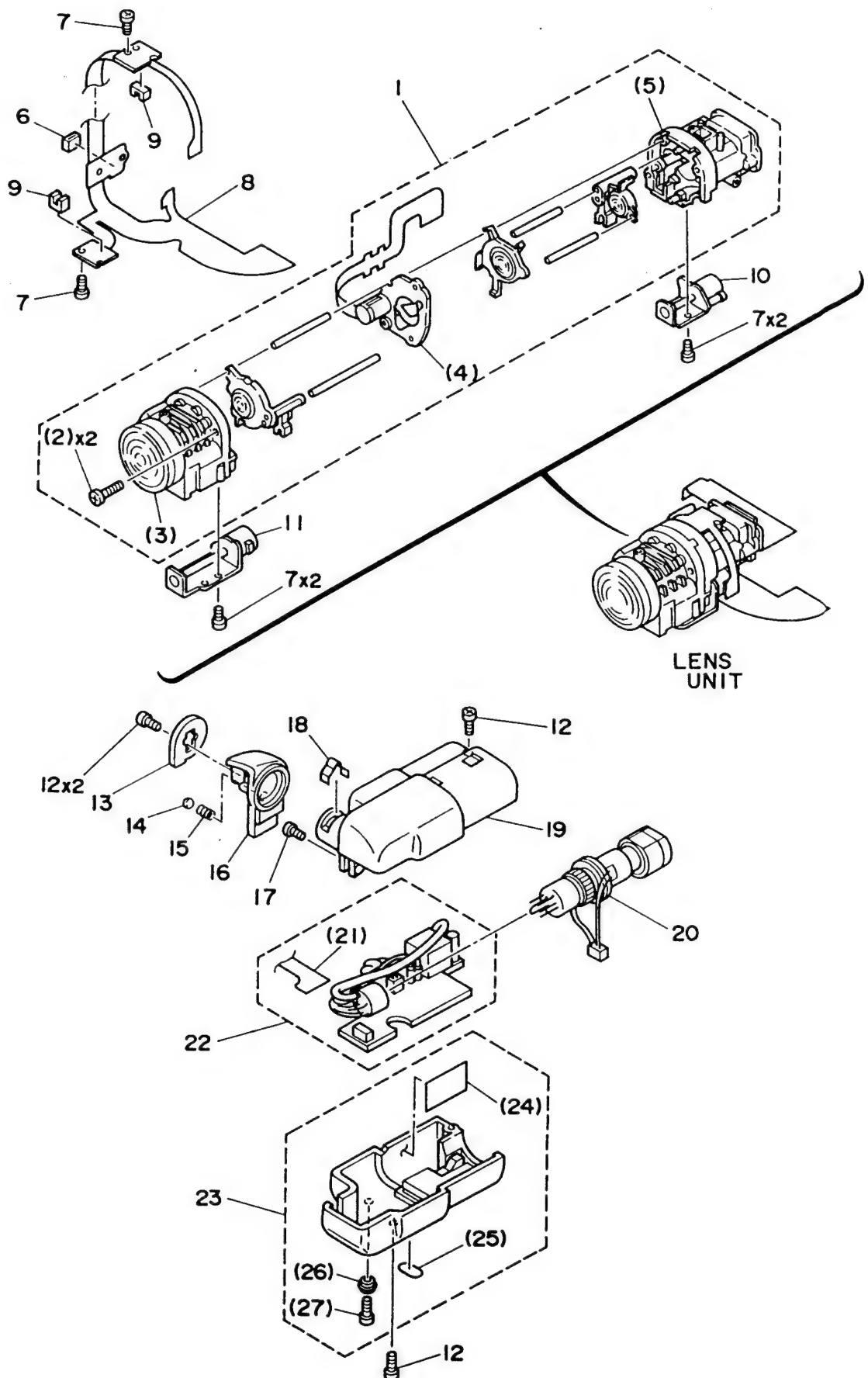
Camera · Recorder Units Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DA1-5934-000 000	C	1	CUSHION, LENS	
2	DH9-0603-000 000	C	1	CRYSTAL FILTER	
3	DA1-5728-000 000	C	1	SPACER	
4	DY1-7386-000 000	B	1	CCD ASS'Y	
5	XA4-9170-409 000	F	9	SCREW	
6	XA1-7170-307 000	F	3	SCREW	
7	DA1-5717-000 000	C	1	LIGHT SHIELD	
8	DG1-3095-000 000	C	1	P.C.B. ASS'Y, CAMERA MAIN	
9	WS6-5007-000 000	C	1	TERMINAL, S	
10	XA9-0568-000 000	F	2	SCREW	
11	DA1-5720-000 000	C	1	LIGHT SHIELD	
12	DG1-3096-000 000	C	1	P.C.B. ASS'Y, RECORDER MAIN	
13	DA1-5445-000 000	C	1	LIGHT SHIELD	
14	DH9-0574-000 000	C	1	PIN JACK	
15	DH9-0607-001 000	C	1	JACK, AV	
16	WS6-5001-000 000	C	1	JACK, MIC	
17	DG1-3091-000 000	C	1	P.C.B. ASS'Y, JACK	
18	XA9-0549-000 000	F	5	SCREW	
19	DA1-5920-000 000	C	1	HOLDER, RECORDER (1)	
20	DA1-5764-000 000	C	1	LIGHT SHIELD	
21	DA1-5758-000 000	C	1	HOLDER, C-MAIN P.C.B. ASS'Y	
22	DG1-3107-000 000	C	1	HOLDER, RECORDER	
23	DA1-5924-000 000	C	1	HOLDER	
24	DA1-5921-000 000	C	1	HOLDER, RECORDER (2)	
25	DA1-5712-000 000	C	1	COVER, DRUM (2)	
26	DH2-1532-000 000	C	1	FPC	
27	DG1-2130-000 000	C	1	P.C.B. ASS'Y, POWER SUPPLY	
28	DH9-0554-000 000	C	1	LITHIUM BATTERY	
29	DA1-5726-000 000	C	2	TERMINAL, BATTERY	
30	XA9-0649-000 000	F	1	SCREW	
31	XA9-0609-000 000	F	3	SCREW	
32	DA1-5922-000 000	C	1	HOLDER, AUDIO P.C.B. ASS'Y	
33	DG1-3094-000 000	C	1	P.C.B. ASS'Y, AUDIO	
34	DA1-6065-000 000	C	1	LIGHT SHIELD	

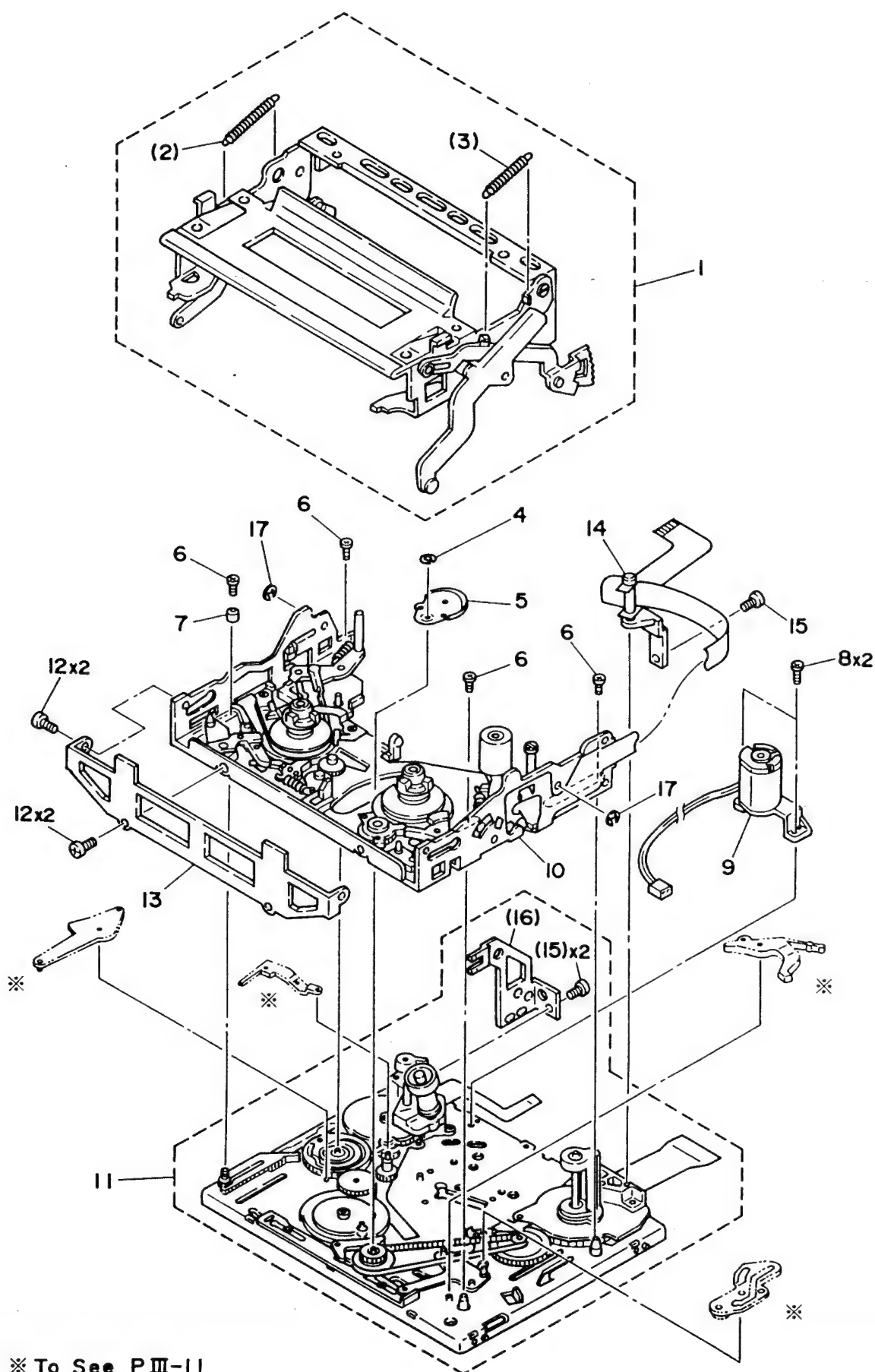
Lens/EVF Units Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY1-7356-000 000	C	1	ZOOM LENS ASS'Y	
2	XA4-9170-807 000	F	2	SCREW	
3	YG9-5288-000 000	C	1	LENS, FRONT	
4	YH8-0038-000 000	C	1	IG METER	
5	YA1-0886-000 000	C	1	HOLDER, RELAY LENS	
6	VS1-5446-006 000	C	1	CONNECTOR 6P	
7	XA4-4170-457 000	F	6	SCREW	
8	YH1-0253-000 000	C	1	FPC	
9	WG8-5043-000 000	C	2	PHOTO INTERRUPTER	
10	YH7-0061-000 000	C	1	MOTOR, AF	
11	YH7-0060-000 000	C	1	MOTOR, PZ	
12	XA4-6170-459 000	F	4	SCREW	
13	DA1-5752-000 000	C	1	PLATE, E.V.F.	
14	XG8-1100-582 000	C	1	BALL, STEEL	
15	DS1-5255-000 000	C	1	SPRING, COIL	
16	DA1-5754-000 000	B	1	HOLDER, E.V.F.	
17	XA4-6170-659 000	F	1	SCREW	
18	DA1-5753-000 000	C	1	SPRING, PLATE	
19	DY1-7354-000 000	B	1	COVER, TOP E.V.F.	
20	DG1-1752-000 000	C	1	CRT ASS'Y	
21	DH2-1533-000 000	C	1	FPC	
22	DG1-2163-000 000	C	1	P.C.B. ASS'Y, E.V.F.	
23	DY1-7357-000 000	B	1	COVER, BOTTOM E.V.F.	
24	DA1-5714-000 000	C	1	SHEET	
25	DA1-5713-000 000	B	1	SEAL, E.V.F.	
26	DA1-5775-000 000	B	1	STOPPER, E.V.F.	
27	XA4-6170-559 000	F	1	SCREW	

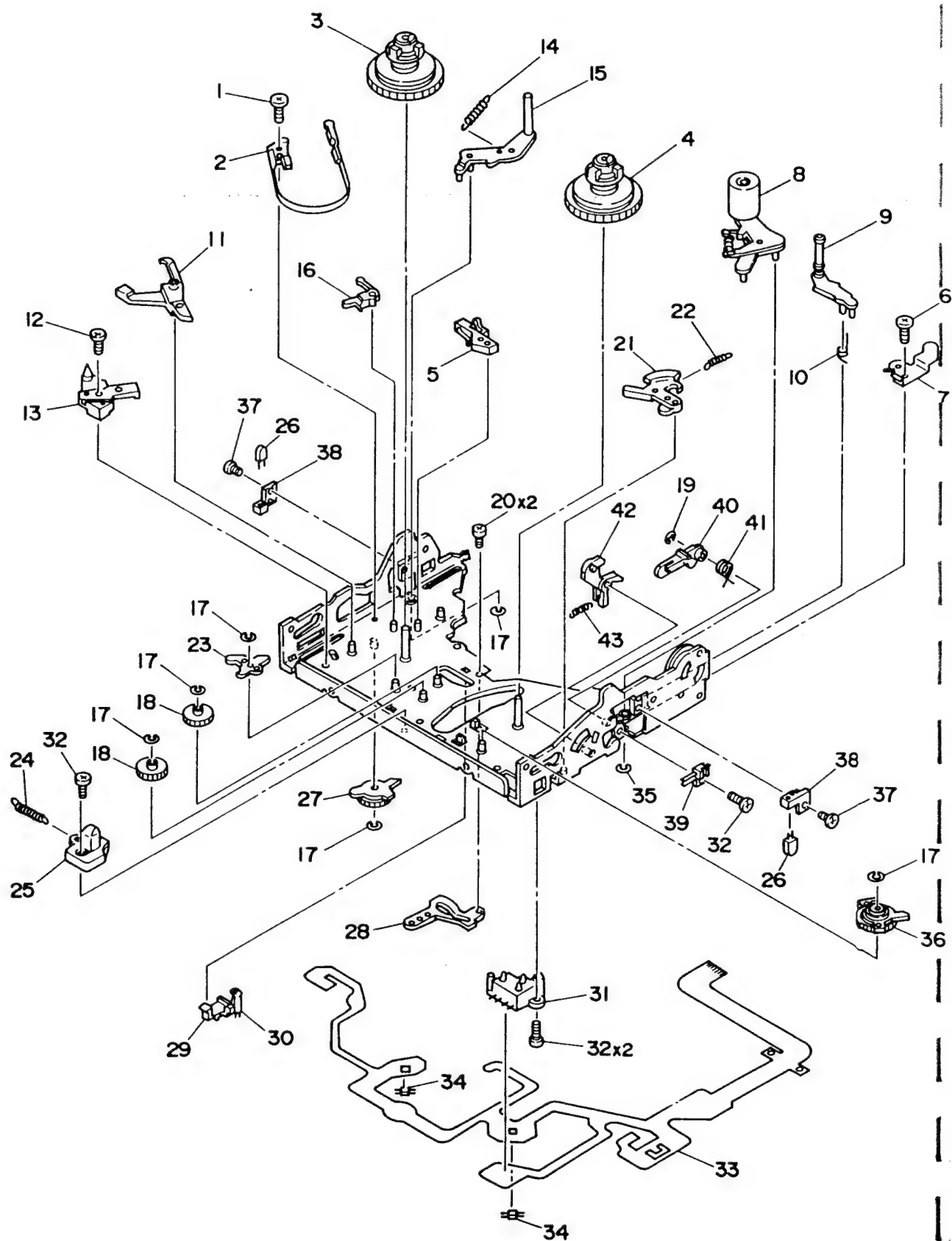
Mechanical Chassis Section I



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DG1-1945-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
2	DS1-5250-000 000	C	1	SPRING, COIL	
3	DS1-5251-000 000	C	1	SPRING, COIL	
4	DA1-3312-000 000	F	1	WASHER	
5	DG1-0984-000 000	C	1	IDLER ASS'Y	
6	DA1-5302-000 000	F	1	SCREW	
7	DA1-6163-000 000	C	1	ROLLER	
8	XA1-7140-357 000	F	2	SCREW	
9	DG1-0996-010 000	C	1	MODE MOTOR ASS'Y	
10	DY1-7212-000 000	C	1	SLIDE CHASSIS ASS'Y	
11	DY1-7213-000 000	C	1	MAIN CHASSIS ASS'Y	
12	XA1-7140-229 000	F	4	SCREW	
13	DA1-5293-000 000	C	1	FRAME	
14	DA1-5292-000 000	C	1	GUIDE, PRINTED CORD	
15	XA1-7140-257 000	F	3	SCREW	
16	DA1-5298-000 000	C	1	PLATE, CATCHING	
17	XD2-1100-132 000	F	2	WASHER	

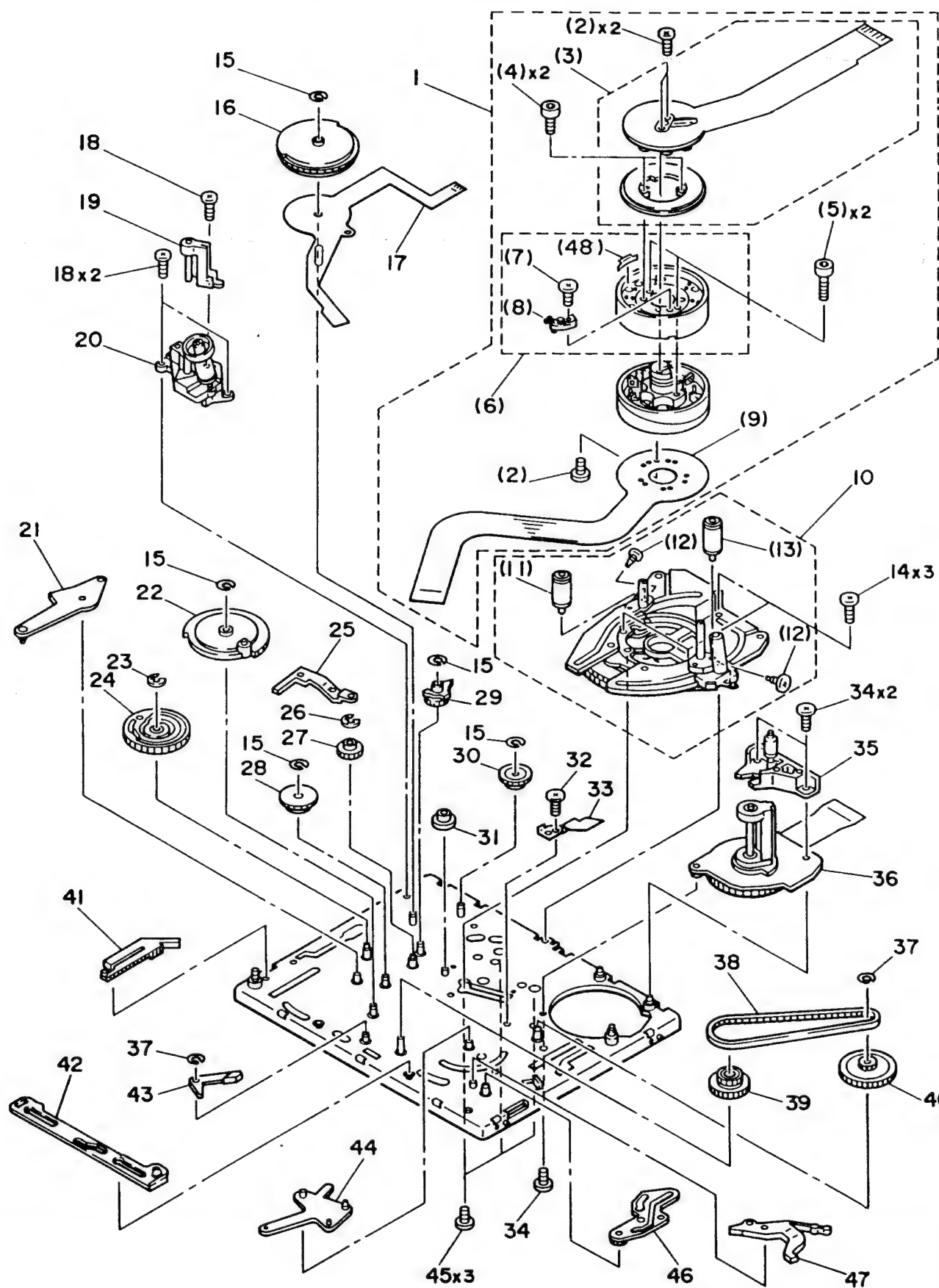
Mechanical Chassis Section 2



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DA1-3323-000 000	F	1	SCREW	
2	DG1-1949-000 000	C	1	TENSION BAND ASS'Y	
3	DG1-2074-000 000	C	1	REEL, SUPPLY	
4	DG1-2075-000 000	C	1	REEL, TAKE UP	
5	DF1-0646-000 000	C	1	LEVER, STOP	
6	XA1-7140-147 000	F	1	SCREW	
7	DA1-5288-000 000	C	1	STOPPER, P12 ARM	
8	DG1-0989-000 000	C	1	PINCH ROLLER ASS'Y	
9	DG1-0990-000 000	C	1	ARM, P12	
10	DS1-6070-000 000	C	1	SPRING, COIL	
11	DA1-5289-000 000	C	1	DRIVE LEVER, RL	
12	XA1-7140-357 000	F	1	SCREW	
13	DA1-5290-000 000	C	1	PIN	
14	DS1-5254-000 000	C	1	SPRING, COIL	
15	DG1-0992-000 000	C	1	TENSION ARM ASS'Y	
16	DA1-3163-000 000	C	1	LOCK LEVER, SUPPLY REEL	
17	DA1-3312-000 000	F	6	WASHER	
18	DA1-3156-000 000	C	2	GEAR	
19	XD2-1100-132 000	F	1	WASHER	
20	DA1-3106-000 000	F	2	SCREW	
21	DA1-5287-000 000	C	1	LEVER, TB	
22	DS1-5216-000 000	C	1	SPRING, COIL	
23	DA1-3166-000 000	C	1	BRAKE, LOADING	
24	DS1-5252-000 000	C	1	SPRING, COIL	
25	DA1-5286-000 000	C	1	RELEASE, RL	
26	DH9-0508-000 000	B	2	PHOTO TRANSISTOR PT4850F	
27	DG1-0985-000 000	C	1	LIMITTER, SLB	
28	DA1-3192-000 000	C	1	PLATE, SLIDE	
29	DA1-3170-000 000	C	1	HOLDER, LED	
30	DH9-0470-000 000	B	1	LED GL452	
31	DH9-0468-000 000	C	1	SWITCH, PUSH	
32	XA1-7140-307 000	F	4	SCREW	
33	DH2-1602-000 000	C	1	PRINTED CORD, S CHASSIS	
34	DH9-0469-000 000	B	2	PHOTO REFLECTOR	
35	DA1-3313-000 000	F	1	WASHER	
36	DG1-0986-000 000	C	1	BRAKE, TAKE UP REEL	
37	XA1-7140-229 000	F	2	SCREW	
38	DA1-5285-000 000	C	2	HOLDER, SENSOR	
39	DH9-0509-000 000	C	1	SWITCH	
40	DA1-5296-000 000	C	1	LEVER, DOWN	
41	DS1-6081-000 000	C	1	SPRING, COIL	
42	DA1-5284-050 000	C	1	LEVER, LOCK	
43	DS1-5253-000 000	C	1	SPRING, COIL	

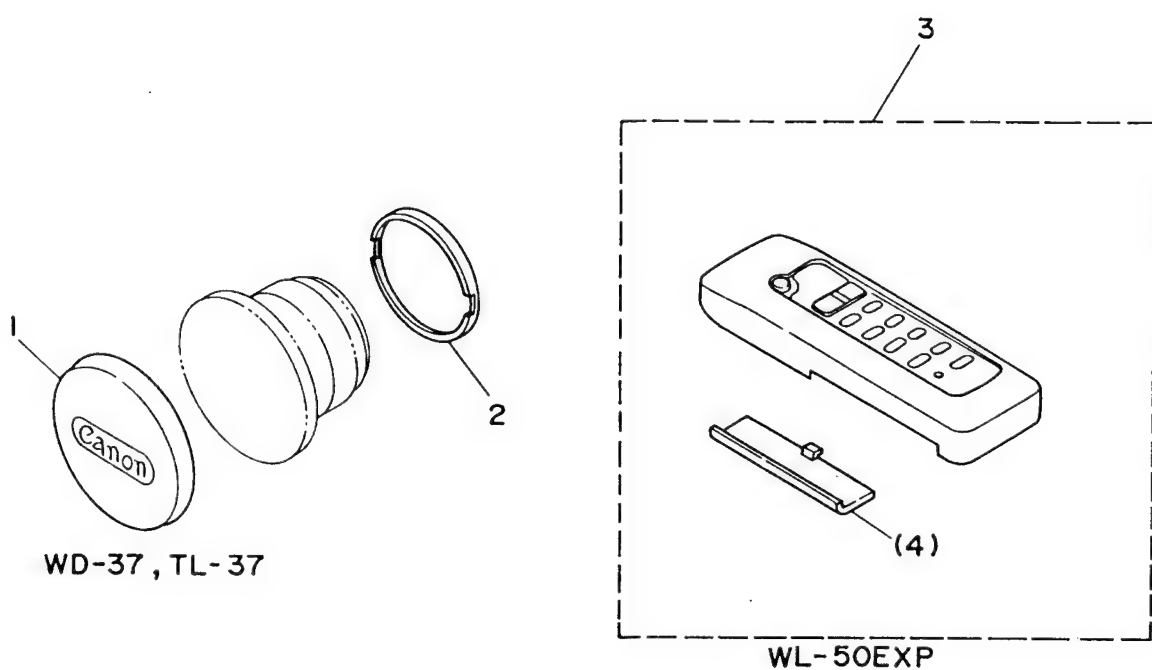
Mechanical Chassis Section 3



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DG1-2280-000	000	E	1	DRUM ASS'Y
2	XA1-1140-147	000	F	4	SCREW
3	DY2-1409-000	000	C	1	MOTOR, DRUM
4	DA1-3316-000	000	F	2	SCREW
5	DA1-3317-000	000	F	2	SCREW
6	DY1-7309-000	000	E	1	UPPER DRUM ASS'Y
7	DA1-3315-000	000	F	1	SCREW
8	DF1-0607-000	000	C	1	EARTH ASS'Y
9	DH2-1220-000	000	C	1	PRINTED CORD, DRUM
10	DG1-0979-000	000	C	1	LOADING ASS'Y
11	DF1-0629-000	000	C	1	POST 5 ASS'Y
12	DA1-3265-000	000	F	2	SCREW
13	DF1-0630-000	000	C	1	POST 9 ASS'Y
14	XA1-1140-307	000	F	3	SCREW
15	DA1-3313-000	000	F	5	WASHER
16	DF1-0621-000	000	C	1	GEAR, MS
17	DH2-1601-000	000	C	1	PRINTED CORD, M CHASSIS
18	XA1-7140-357	000	F	3	SCREW
19	DF1-0633-000	000	C	1	BASE ASS'Y, POST 2
20	DG1-2331-010	000	C	1	P4 BASE ASS'Y
21	DA1-3195-000	000	C	1	LEVER, MODE (1)
22	DF1-0622-000	000	C	1	GEAR, SLIDE
23	XD2-1100-172	000	F	1	E RING
24	DA1-3152-000	000	C	1	GEAR, CAM
25	DA1-3168-000	000	C	1	LEVER, SUPPLY MODE
26	XD2-1100-102	000	F	1	E RING
27	DA1-3151-000	000	C	1	GEAR
28	DA1-3154-000	000	C	1	GEAR, SL
29	DA1-3153-000	000	C	1	GEAR
30	DA1-3155-000	000	C	1	GEAR
31	DA1-6162-000	000	C	1	ROLLER
32	XA1-7140-147	000	F	1	SCREW
33	DA1-3266-000	000	C	1	PLATE, GUIDE
34	XA1-7140-257	000	F	3	SCREW
35	DY2-1400-000	000	C	1	POST 10 ASS'Y
36	DG1-0997-000	000	C	1	CAPSTAN MOTOR
37	DA1-3312-000	000	F	2	WASHER
38	DA1-3148-000	000	C	1	BELT, CAPSTAN
39	DF1-0626-000	000	C	1	GEAR, DRIVE
40	DF1-0625-050	000	C	1	GEAR, CAPSTAN
41	DA1-3161-000	000	C	1	RACK, SL
42	DA1-3190-000	000	C	1	LEVER, MODE (2)
43	DA1-3167-000	000	C	1	LEVER, NEUTRAL
44	DA1-3196-000	000	C	1	LEVER, T MODE
45	XA1-1140-259	000	F	3	SCREW
46	DF1-1172-000	000	C	1	LEVER, PINCH
47	DA1-3165-000	000	C	1	LEVER, EJECT
48	DA1-3065-000	000	C	1	TAB, RETAINER

Accessory Parts Section



MECHANICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
1	DY3-4201-000 000	B	1	CAP, LENS	
2	DY3-4209-000 000	B	1	CAP, DUST (WD-37)	
	DY3-4210-000 000	B	1	CAP, DUST (TL-37)	
3	DY1-7353-000 000	B	1	WIRELESS CONTROLLER WL-51EXP	
4	DY4-2984-000 000	B	1	COVER, BATTERY	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
△	C2912	VC7-1430-562	000	D 1	CAPACITOR, CERA 5600pF/125V
△	C2915	VC7-1360-102	000	D 1	CAPACITOR, CERA 1000pF/1KV
△	C2917	VC7-1380-152	000	D 1	CAPACITOR, CERA 1500pF/500V
△	C2919	VC7-1430-562	000	D 1	CAPACITOR, CERA 5600pF/125V
	CN001	VS1-5469-020	000	C 1	CONNECTOR 20P
	CN101	VS1-5470-018	000	C 1	CONNECTOR 18P
	CN501	VS1-5316-015	000	C 1	CONNECTOR 15P
	CN600	VS1-5347-008	000	C 1	CONNECTOR 8P
	CN601	VS1-5470-020	000	C 1	CONNECTOR 20P
	CN1002	VS1-5469-028	000	C 1	CONNECTOR 28P
	CN2001	VS1-5256-016	000	C 1	CONNECTOR 16P
	CN2201	VS1-5469-010	000	C 1	CONNECTOR 10P
	CN2202	VS1-5469-016	000	C 1	CONNECTOR 16P
	CN2401	VS1-5256-020	000	C 1	CONNECTOR 20P
	CN4101	VS1-5051-006	000	C 1	CONNECTOR 6P
	CN4102	VS1-5256-016	000	C 1	CONNECTOR 16P
	CN4103	VS1-5471-016	000	C 1	CONNECTOR 16P
	CN4104	VS1-5470-028	000	C 1	CONNECTOR 28P
	CN4105	VS1-5347-008	000	C 1	CONNECTOR 8P
	CN4106	VS1-5256-008	000	C 1	CONNECTOR 8P
	CN4107	VS1-5469-018	000	C 1	CONNECTOR 18P
	CN4108	VS1-5471-010	000	C 1	CONNECTOR 10P
	CN4201	VS1-5256-020	000	C 1	CONNECTOR 20P
	CN4202	VS1-5149-015	000	C 1	CONNECTOR 15P
	D001	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D002	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D003	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D004	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D005	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D006	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D007	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D008	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D241	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D501	WAL-5122-000	000	B 1	DIODE DAN222
	D502	WAL-5122-000	000	B 1	DIODE DAN222
	D503	WAL-5122-000	000	B 1	DIODE DAN222
	D504	WAL-5122-000	000	B 1	DIODE DAN222
	D600	WAL-5122-000	000	B 1	DIODE DAN222
	D601	WAL-5122-000	000	B 1	DIODE DAN222
	D602	WAL-5231-000	000	B 1	DIODE DAP222
	D605	WAL-5122-000	000	B 1	DIODE DAN222
	D931	WAL-5227-000	000	B 1	DIODE 1SS362
	D932	WAL-5227-000	000	B 1	DIODE 1SS362
	D1001	WAL-1084-000	000	B 1	DIODE MA110
	D1002	WAL-9003-000	000	B 1	DIODE SB05-05CP
	D1003	WAL-1084-000	000	B 1	DIODE MA110
	D2001	WAL-1084-000	000	B 1	DIODE MA110
	D2002	WAL-5232-000	000	B 1	DIODE HN2D01FU
	D2003	WAL-5232-000	000	B 1	DIODE HN2D01FU
	D2004	WAL-5249-000	000	B 1	DIODE 1SV223
	D2201	WAL-1084-000	000	B 1	DIODE MA110
	D2401	WAL-1084-000	000	B 1	DIODE MA110
	D2901	WAL-0989-000	000	B 1	DIODE, ZENER MA3100
	D2902	WAL-1084-000	000	B 1	DIODE MA110
	D2903	WAL-1084-000	000	B 1	DIODE MA110
	D2904	WAL-1123-000	000	B 1	DIODE AG01Z
	D4101	WAL-5350-000	000	B 1	DIODE MA724
	D4301	WAL-5231-000	000	B 1	DIODE DAP222
	D4302	WAL-5236-000	000	B 1	DIODE DA221
	D4303	WAL-5231-000	000	B 1	DIODE DAP222

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
IC101	WA4-5435-000	000	B 1	IC LA7454W	
IC102	WA4-5435-000	000	B 1	IC LA7454W	
IC103	WA3-4264-000	000	B 1	IC SC14S66F	
IC104	WA3-4264-000	000	B 1	IC SC14S66F	
IC105	WA4-5365-000	000	B 1	IC LA7456M	
IC106	WA3-5657-000	000	B 1	IC SC14S70F	
IC108	WA3-4264-000	000	B 1	IC SC14S66F	
IC109	WA4-5316-000	000	B 1	IC TK11447	
IC241	WA4-5525-000	000	B 1	IC LA7470V	
IC501	DH4-0200-000	000	B 1	IC CXA1234AR	
IC502	DH4-0200-000	000	B 1	IC CXA1234AR	
IC600	WA4-5443-000	000	B 1	IC NJM2246M	
IC601	DH4-0510-000	000	B 1	IC MC13400FUEF	
IC602	WA4-5316-000	000	B 1	IC TK11447	
IC604	DH4-0514-000	000	B 1	IC CXA1207AR	
IC606	DH4-0297-000	000	B 1	IC CXL1506	
IC607	DH4-0264-000	000	B 1	IC CXA1208R	
IC608	DH4-0196-000	000	B 1	IC CXA1203N	
IC609	DH4-0411-000	000	B 1	IC MM1058XF	
IC610	DH4-0297-000	000	B 1	IC CXL1506	
IC931	DH4-0511-000	000	B 1	IC CXD2107M	
IC1001	WA4-5424-000	000	B 1	IC LM311DB	
IC1002	WA4-5518-000	000	B 1	IC MB3785PFV	
IC1003	WA4-5480-000	000	B 1	IC LM324N	
IC1005	WA4-5402-000	000	B 1	IC RH5RA35AA	
IC1006	WA4-5336-000	000	B 1	IC MPC1720ML2	
IC1007	WA4-5403-000	000	B 1	IC RH5VA45CA	
IC2001	WA3-6392-000	000	B 1	IC μ PD16506GR	
IC2002	WA3-6369-000	000	B 1	IC CXD1256R	
IC2003	WA4-5044-000	000	B 1	IC CXD1159Q	
IC2101	WA4-5350-000	000	B 1	IC CXA1390AR	
IC2201	WA4-5353-000	000	B 1	IC CXL1507N	
IC2202	WA4-5354-000	000	B 1	IC CXL5504M	
IC2203	WA4-5351-000	000	B 1	IC CXA1391R	
IC2204	WA4-5352-000	000	B 1	IC CXA1392R	
IC2301	WA4-5413-000	000	B 1	IC NJM2902V	
IC2302	DH4-0406-000	000	B 1	IC LD5090	
IC2303	WA3-6307-000	000	B 1	IC MB88344	
IC2304	DH4-0389-000	000	B 1	IC PST574C	
IC2305	Y22-2879-000	000	B 1	IC SC418027FU	
IC2401	DH4-0390-000	000	B 1	IC LD5088	
IC2402	WA4-5516-000	000	B 1	IC TB6504F	
IC2403	WA4-5337-000	000	B 1	IC LB1837M	
IC2901	WA4-5428-000	000	B 1	IC BA7149F	
IC4101	WA4-1145-000	000	B 1	IC RH5VA45AA	
IC4102	DH4-0549-002	000	B 1	IC CXP80624-117Q	
IC4103	DH4-0372-000	000	B 1	IC μ PD6451AGT-810	
IC4104	WA4-5129-000	000	B 1	IC S-87050AF	
IC4105	DH4-0525-000	000	B 1	IC SC405631FB	
IC4106	WA3-6112-000	000	B 1	IC RTC-4553A	
IC4201	DH4-0189-000	000	B 1	IC CXA1127M	
IC4202	WA4-5566-000	000	B 1	IC CXA1512N	
IC4203	DH4-0318-000	000	B 1	IC CXA1127AM	
IC4251	DH4-0564-000	000	B 1	IC CXA1481AR	
IC4301	WA3-6436-000	000	B 1	IC NJU4066BV	
IC4302	WA4-1248-000	000	B 1	IC μ PC324G2	
IC4303	WA4-0907-000	000	B 1	IC BA6303F	
IC4304	WA4-6006-000	000	B 1	IC MC14013BF	
L2902	DH9-0615-000	000	D 1	COIL, LINEARITY	
LED001	DH9-0625-000	000	C 1	LED SLH-34VT144F	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q101	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q102	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q201	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q202	WA2-1198-000 000	B	1	TRANSISTOR IMD2	
Q203	WA2-1235-000 000	B	1	TRANSISTOR IMB6	
Q204	WA2-1337-000 000	B	1	TRANSISTOR 2SC4081	
Q501	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q502	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q503	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q504	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	
Q505	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q506	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q507	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q508	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	
Q509	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q510	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q511	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q512	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	
Q513	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q514	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q515	WA2-5346-000 000	B	1	TRANSISTOR 2SA1362	
Q516	WA2-5307-000 000	B	1	TRANSISTOR 2SC4649	
Q517	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q518	WA2-5306-000 000	B	1	TRANSISTOR DTA143EE	
Q519	WA2-1400-000 000	B	1	TRANSISTOR 2SA1576	
Q520	WA2-5139-000 000	B	1	TRANSISTOR DTA144EE	
Q521	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q602	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q603	WA2-5165-000 000	B	1	TRANSISTOR UMD2	
Q604	WA2-5165-000 000	B	1	TRANSISTOR UMD2	
Q605	WA2-5165-000 000	B	1	TRANSISTOR UMD2	
Q606	WA2-5165-000 000	B	1	TRANSISTOR UMD2	
Q607	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q608	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q609	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q610	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q611	WA2-0411-000 000	B	1	TRANSISTOR 2SA1314BC	
Q612	WA2-5162-000 000	B	1	TRANSISTOR UMH5	
Q613	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q614	WA2-5301-000 000	B	1	TRANSISTOR UMH8	
Q615	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q616	WA2-5315-000 000	B	1	TRANSISTOR UMB5	
Q617	WA2-5160-000 000	B	1	TRANSISTOR UMT2	
Q618	WA2-5315-000 000	B	1	TRANSISTOR UMB5	
Q619	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q620	WA2-5347-000 000	B	1	TRANSISTOR RN2427	
Q621	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q622	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q623	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q624	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q625	WA2-5142-000 000	B	1	TRANSISTOR 2SC4617	
Q626	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q627	WA2-5206-000 000	B	1	TRANSISTOR DTA124EE	
Q628	WA2-5141-000 000	B	1	TRANSISTOR 2SA1774	
Q629	WA2-5314-000 000	B	1	TRANSISTOR UMH6	
Q630	WA2-5139-000 000	B	1	TRANSISTOR DTC144EE	
Q631	WA2-5314-000 000	B	1	TRANSISTOR UMH6	
Q633	WA2-5323-000 000	B	1	TRANSISTOR UMX5	
Q634	WA2-5161-000 000	B	1	TRANSISTOR UMX2	
Q635	WA2-5314-000 000	B	1	TRANSISTOR UMH6	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q637	WA2-5314-000	000	B 1	TRANSISTOR UMH6	
Q638	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q639	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q640	WA2-5313-000	000	B 1	TRANSISTOR UMB8	
Q641	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q643	WA2-5315-000	000	B 1	TRANSISTOR UMB5	
Q644	WA2-5161-000	000	B 1	TRANSISTOR UMX2	
Q645	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q648	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q649	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q650	WA2-5312-000	000	B 1	TRANSISTOR DTA114TE	
Q651	WA2-5307-000	000	B 1	TRANSISTOR 2SC4649	
Q652	WA2-5169-000	000	B 1	FET 2SK880	
Q653	WA2-5169-000	000	B 1	FET 2SK880	
Q654	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q655	WA2-5161-000	000	B 1	TRANSISTOR UMX2	
Q656	WA2-5314-000	000	B 1	TRANSISTOR UMH6	
Q657	WA2-5301-000	000	B 1	TRANSISTOR UMH8	
Q658	WA2-5169-000	000	B 1	FET 2SK880	
Q659	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q660	WA2-5313-000	000	B 1	TRANSISTOR UMB8	
Q662	WA2-5314-000	000	B 1	TRANSISTOR UMH6	
Q663	WA2-5314-000	000	B 1	TRANSISTOR UMH6	
Q664	WA2-5160-000	000	B 1	TRANSISTOR UMT2	
Q665	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q666	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q667	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q668	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q669	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q670	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q671	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q672	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q673	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q674	WA2-5147-000	000	B 1	TRANSISTOR UMZ1	
Q675	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q676	WA2-5147-000	000	B 1	TRANSISTOR UMZ1	
Q677	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q679	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q680	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q681	WVA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q682	WA2-5165-000	000	B 1	TRANSISTOR UMD2	
Q683	WA2-5314-000	000	B 1	TRANSISTOR UMH6	
Q684	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q685	WA2-5161-000	000	B 1	TRANSISTOR UMX2	
Q686	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q687	WA2-5161-000	000	B 1	TRANSISTOR UMX2	
Q688	WA2-5314-000	000	B 1	TRANSISTOR UMH6	
Q689	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q690	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q924	WA2-5169-000	000	B 1	FET 2SK880	
Q931	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q932	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q933	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q935	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q937	WA2-5139-000	000	B 1	TRANSISTOR DTC144EE	
Q938	WA2-5142-000	000	B 1	TRANSISTOR 2SC4617	
Q939	WA2-5161-000	000	B 1	TRANSISTOR UMX2	
Q940	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	
Q941	WA2-5161-000	000	B 1	TRANSISTOR UMX2	
Q943	WA2-5141-000	000	B 1	TRANSISTOR 2SA1774	

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
Q945	WA2-5142-000	000	B	1	TRANSISTOR 2SC4617
Q1001	WA2-1132-000	000	B	1	TRANSISTOR FMA2-T98
Q1002	WA2-1337-000	000	B	1	TRANSISTOR 2SC4081
Q1003	WA2-5419-000	000	B	1	TRANSISTOR 2SB1122
Q1004	WA2-5290-000	000	B	1	TRANSISTOR FP101
Q1005	WA2-1406-000	000	B	1	TRANSISTOR DTC124EU
Q1006	WA2-5149-000	000	B	1	TRANSISTOR 2SB1412P5
Q1007	WA2-5290-000	000	B	1	TRANSISTOR FP101
Q1008	WA2-5290-000	000	B	1	TRANSISTOR FP101
Q1009	WA2-5290-000	000	B	1	TRANSISTOR FP101
Q1010	WA2-1400-000	000	B	1	TRANSISTOR 2SA1576
Q2001	WA2-5360-000	000	B	1	FET 2SK662QR
Q2002	WA2-5141-000	000	B	1	TRANSISTOR 2SA1774
Q2003	WA2-5142-000	000	B	1	TRANSISTOR 2SC4617
Q2004	WA2-5161-000	000	B	1	TRANSISTOR UMX2
Q2005	WA2-5142-000	000	B	1	TRANSISTOR 2SC4617
Q2006	WA2-5142-000	000	B	1	TRANSISTOR 2SC4617
Q2201	WA2-5141-000	000	B	1	TRANSISTOR 2SA1774
Q2202	WA2-5160-000	000	B	1	TRANSISTOR UMT2
Q2203	WA2-5141-000	000	B	1	TRANSISTOR 2SA1774
Q2204	WA2-5161-000	000	B	1	TRANSISTOR UMX2
Q2205	WA2-5147-000	000	B	1	TRANSISTOR UMZ1
Q2206	WA2-5161-000	000	B	1	TRANSISTOR UMX2
Q2207	WA2-5139-000	000	B	1	TRANSISTOR DTC144EE
Q2208	WA2-5160-000	000	B	1	TRANSISTOR UMT2
Q2209	WA2-5147-000	000	B	1	TRANSISTOR UMZ1
Q2210	WA2-5142-000	000	B	1	TRANSISTOR 2SC4617
Q2211	WA2-5147-000	000	B	1	TRANSISTOR UMZ1
Q2212	WA2-5161-000	000	B	1	TRANSISTOR UMX2
Q2213	WA2-5141-000	000	B	1	TRANSISTOR 2SA1774
Q2214	WA2-5160-000	000	B	1	TRANSISTOR UMT2
Q2215	WA2-5147-000	000	B	1	TRANSISTOR UMZ1
Q2401	WA2-5162-000	000	B	1	TRANSISTOR UMH5
Q2402	WA2-5162-000	000	B	1	TRANSISTOR UMH5
Q2405	WA2-5315-000	000	B	1	TRANSISTOR UMB5
Q2406	WA2-5141-000	000	B	1	TRANSISTOR 2SA1774
Q2901	WA2-0839-000	000	B	1	TRANSISTOR 2SA1226
Q2902	WA2-1498-000	000	B	1	TRANSISTOR 2SA1162
Q2904	WA2-5423-000	000	B	1	TRANSISTOR 2SD968-S
Q4101	WA2-5155-000	000	B	1	TRANSISTOR DTA114EE
Q4102	WA2-5139-000	000	B	1	TRANSISTOR DTC144EE
Q4103	WA2-5272-000	000	B	1	TRANSISTOR IMH14
Q4104	WA2-5272-000	000	B	1	TRANSISTOR IMH14
Q4105	WA2-5272-000	000	B	1	TRANSISTOR IMH14
Q4106	WA2-5314-000	000	B	1	TRANSISTOR UMH6
Q4107	WA2-5266-000	000	B	1	TRANSISTOR UMW1
Q4108	WA2-5266-000	000	B	1	TRANSISTOR UMW1
Q4109	WA2-5139-000	000	B	1	TRANSISTOR DTC144EE
Q4110	WA2-5162-000	000	B	1	TRANSISTOR UMH5
Q4111	WA2-5162-000	000	B	1	TRANSISTOR UMH5
Q4252	WA2-5160-000	000	B	1	TRANSISTOR UMT2
Q4301	WA2-5139-000	000	B	1	TRANSISTOR DTC144EE
Q4302	WA2-5139-000	000	B	1	TRANSISTOR DTC144EE
Q4303	WA2-5165-000	000	B	1	TRANSISTOR UMD2
RR1001	DH9-0555-000	000	D	1	LINK, IC FRF-1600-P005
RR1002	DH9-0555-000	000	D	1	LINK, IC FRF-1600-P005
RR1003	DH9-0555-000	000	D	1	LINK, IC FRF-1600-P005
RT001	DH9-0602-000	000	B	1	REMOTE CONTROL P.C.B. ASS'Y
SW241	WC3-5040-000	000	C	1	SWITCH, SLID
T1001	DH3-0102-000	000	C	1	TRANSFORMER

ELECTRICAL PARTS

SYMBOL	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS	
△	T2901	DH9-0633-000	000	D	1	FLYBACK TRANSFORMER
	VC2001	VC6-0340-200	000	C	1	CAPACITOR, TRIMMER 20pF
	VC2002	VC6-0340-200	000	C	1	CAPACITOR, TRIMMER 20pF
	VC4101	VC6-0340-300	000	C	1	CAPACITOR, TRIMMER 30pF
	VR101	VR5-7780-103	000	C	1	RESISTOR, VARIABLE 10KΩ
	VR102	VR5-7780-103	000	C	1	RESISTOR, VARIABLE 10KΩ
	VR103	VR5-7780-103	000	C	1	RESISTOR, VARIABLE 10KΩ
	VR104	VR5-7780-103	000	C	1	RESISTOR, VARIABLE 10KΩ
	VR501	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR502	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR503	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR504	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR600	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR601	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR602	VR7-3180-223	000	C	1	RESISTOR, VARIABLE 22KΩ
	VR603	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR604	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR605	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR606	VR7-3180-102	000	C	1	RESISTOR, VARIABLE 1KΩ
	VR607	VR7-3180-473	000	C	1	RESISTOR, VARIABLE 47KΩ
	VR608	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR609	VR7-3180-223	000	C	1	RESISTOR, VARIABLE 22KΩ
	VR610	VR7-3180-102	000	C	1	RESISTOR, VARIABLE 1KΩ
	VR611	VR7-3180-473	000	C	1	RESISTOR, VARIABLE 47KΩ
	VR612	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR613	VR7-3180-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR614	VR7-3180-471	000	C	1	RESISTOR, VARIABLE 470Ω
	VR615	VR7-3180-102	000	C	1	RESISTOR, VARIABLE 1KΩ
	VR616	VR7-3180-223	000	C	1	RESISTOR, VARIABLE 22KΩ
	VR617	VR7-3180-471	000	C	1	RESISTOR, VARIABLE 470Ω
	VR1001	VR5-7780-102	000	C	1	RESISTOR, VARIABLE 1KΩ
	VR1002	VR5-7780-472	000	C	1	RESISTOR, VARIABLE 4.7KΩ
	VR1003	VR5-7780-102	000	C	1	RESISTOR, VARIABLE 1KΩ
	VR1004	VR5-7780-102	000	C	1	RESISTOR, VARIABLE 1KΩ
	VR2401	VR5-7780-223	000	C	1	RESISTOR, VARIABLE 22KΩ
	VR2901	VR7-2100-201	000	C	1	RESISTOR, VARIABLE 200Ω
	VR2902	VR7-2100-333	000	C	1	RESISTOR, VARIABLE 33KΩ
△	VR2903	VR7-2170-305	000	C	1	RESISTOR, VARIABLE 3MΩ/200V
	VR2904	VR7-0710-105	000	C	1	RESISTOR, VARIABLE 1MΩ
	VR4101	VR7-3180-223	000	C	1	RESISTOR, VARIABLE 22KΩ
	VR4301	VR7-3180-223	000	C	1	RESISTOR, VARIABLE 22KΩ
	VR4302	VR7-3180-474	000	C	1	RESISTOR, VARIABLE 470KΩ
	X601	DH9-0616-000	000	C	1	OSCILLATOR, CRYSTAL (4.43MHz)
	X2001	DH9-0622-000	000	C	1	OSCILLATOR, CRYSTAL (28.4MHz)
	X2002	DH9-0621-000	000	C	1	OSCILLATOR, CRYSTAL (17.7MHz)
	X2301	WK2-5294-000	000	C	1	OSCILLATOR, SERAMIC (16MHz)
	X4101	WK2-5262-000	000	C	1	OSCILLATOR, CRYSTAL (11.7MHz)
	X4102	WK2-5269-000	000	C	1	OSCILLATOR, CRYSTAL (1.056MHz)

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
12	DA1-3065-000 000	C	1	TAB, RETAINER	
10	DA1-3106-000 000	F	2	SCREW	
12	DA1-3148-000 000	C	1	BELT, CAPSTAN	
12	DA1-3151-000 000	C	1	GEAR	
12	DA1-3152-000 000	C	1	GEAR, CAM	
12	DA1-3153-000 000	C	1	GEAR	
12	DA1-3154-000 000	C	1	GEAR, SL	
12	DA1-3155-000 000	C	1	GEAR	
10	DA1-3156-000 000	C	2	GEAR	
12	DA1-3161-000 000	C	1	RACK, SL	
10	DA1-3163-000 000	C	1	LOCK LEVER, SUPPLY REEL	
12	DA1-3165-000 000	C	1	LEVER, EJECT	
10	DA1-3166-000 000	C	1	BRAKE, LOADING	
12	DA1-3167-000 000	C	1	LEVER, NEUTRAL	
12	DA1-3168-000 000	C	1	LEVER, SUPPLY MODE	
10	DA1-3170-000 000	C	1	HOLDER, LED	
12	DA1-3190-000 000	C	1	LEVER, MODE (2)	
10	DA1-3192-000 000	C	1	PLATE, SLIDE	
12	DA1-3195-000 000	C	1	LEVER, MODE (1)	
12	DA1-3196-000 000	C	1	LEVER, T MODE	
12	DA1-3265-000 000	F	2	SCREW	
12	DA1-3266-000 000	C	1	PLATE, GUIDE	
8,10,12	DA1-3312-000 000	F	9	WASHER	
10,12	DA1-3313-000 000	F	6	WASHER	
12	DA1-3315-000 000	F	1	SCREW	
12	DA1-3316-000 000	F	2	SCREW	
12	DA1-3317-000 000	F	2	SCREW	
10	DA1-3323-000 000	F	1	SCREW	
2	DA1-4009-000 000	F	2	SCREW	
10	DA1-5284-050 000	C	1	LEVER, LOCK	
10	DA1-5285-000 000	C	2	HOLDER, SENSOR	
10	DA1-5286-000 000	C	1	RELEASE, RL	
10	DA1-5287-000 000	C	1	LEVER, TB	
10	DA1-5288-000 000	C	1	STOPPER, P12 ARM	
10	DA1-5289-000 000	C	1	DRIVE LEVER, RL	
10	DA1-5290-000 000	C	1	PIN	
8	DA1-5292-000 000	C	1	GUIDE, PRINTED CORD	
8	DA1-5293-000 000	C	1	FRAME	
10	DA1-5296-000 000	C	1	LEVER, DOWN	
8	DA1-5298-000 000	C	1	PLATE, CATCHING	
8	DA1-5302-000 000	F	1	SCREW	
4	DA1-5445-000 000	C	1	LIGHT SHIELD	
2	DA1-5702-000 000	C	1	HOLDER, TRIGGER	
2	DA1-5705-000 000	B	1	COVER, LS	
2	DA1-5706-000 000	C	1	HOLDER, FLXBLE	
4	DA1-5712-000 000	C	1	COVER, DRUM (2)	
6	DA1-5713-000 000	B	1	SEAL, E.V.F.	
6	DA1-5714-000 000	C	1	SHEET	
4	DA1-5717-000 000	C	1	LIGHT SHIELD	
4	DA1-5720-000 000	C	1	LIGHT SHIELD	
4	DA1-5726-000 000	C	2	TERMINAL, BATTERY	
4	DA1-5728-000 000	C	1	SPACER	
2	DA1-5736-000 000	C	1	KNOB, BATTERY EJECT	
2	DA1-5737-000 000	C	1	HOLDER, BATTERY EJECT KNOB	
2	DA1-5739-000 000	C	1	PLATE, STRAP(A) ATTACHMENT	
2	DA1-5740-000 000	C	1	PLATE, STRAP(B) ATTACHMENT	
2	DA1-5742-000 000	B	1	STRAP, HAND	
2	DA1-5746-000 000	B	1	EYE CAP	
6	DA1-5752-000 000	C	1	PLATE, E.V.F.	
6	DA1-5753-000 000	C	1	SPRING, PLATE	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
6	DA1-5754-000 000	B	1	HOLDER, E.V.F.	
2	DA1-5756-000 000	B	1	SPRING, PLATE	
4	DA1-5758-000 000	C	1	HOLDER, C-MAIN P.C.B. ASS'Y	
4	DA1-5764-000 000	C	1	LIGHT SHIELD	
6	DA1-5775-000 000	B	1	STOPPER, E.V.F.	
2	DA1-5779-000 000	B	1	SEAL, LS COVER	
2	DA1-5905-000 000	B	1	COVER, REAR (2)	
2	DA1-5907-000 000	B	1	COVER, AV	
2	DA1-5912-000 000	C	1	SHEET, RUBBER	
4	DA1-5920-000 000	C	1	HOLDER, RECORDER (1)	
4	DA1-5921-000 000	C	2	HOLDER, RECORDER (2)	
4	DA1-5922-000 000	C	1	HOLDER, AUDIO P.C.B. ASS'Y	
2	DA1-5923-000 000	B	1	KNOB, SWITCH	
4	DA1-5924-000 000	C	1	HOLDER	
2	DA1-5927-000 000	C	1	COVER, DRUM (1)	
4	DA1-5934-000 000	C	1	CUSHION, LENS	
2	DA1-5935-000 000	C	1	COVER, MICROPHONE	
4	DA1-6065-000 000	C	1	LIGHT SHIELD	
12	DA1-6162-000 000	C	1	ROLLER	
8	DA1-6163-000 000	C	1	ROLLER	
12	DF1-0607-000 000	C	1	EARTH ASS'Y	
12	DF1-0621-000 000	C	1	GEAR, MS	
12	DF1-0622-000 000	C	1	GEAR, SLIDE	
12	DF1-0625-050 000	C	1	GEAR, CAPSTAN	
12	DF1-0626-000 000	C	1	GEAR, DRIVE	
12	DF1-0629-000 000	C	1	POST 5 ASS'Y	
12	DF1-0630-000 000	C	1	POST 9 ASS'Y	
12	DF1-0633-000 000	C	1	BASE ASS'Y, POST 2	
10	DF1-0646-000 000	C	1	LEVER, STOP	
12	DF1-1172-000 000	C	1	LEVER, PINCH	
12	DG1-0979-000 000	C	1	LOADING ASS'Y	
8	DG1-0984-000 000	C	1	IDLER ASS'Y	
10	DG1-0985-000 000	C	1	LIMITTER, SLB	
10	DG1-0986-000 000	C	1	BRAKE, TAKE UP REEL	
10	DG1-0989-000 000	C	1	PINCH ROLLER ASS'Y	
10	DG1-0990-000 000	C	1	ARM, P12	
10	DG1-0992-000 000	C	1	TENSION ARM ASS'Y	
8	DG1-0996-010 000	C	1	MODE MOTOR ASS'Y	
12	DG1-0997-000 000	C	1	CAPSTAN MOTOR	
6	DG1-1752-000 000	C	1	CRT ASS'Y	
8	DG1-1945-000 000	C	1	CASSETTE COMPARTMENT ASS'Y	
10	DG1-1949-000 000	C	1	TENSION BAND ASS'Y	
10	DG1-2074-000 000	C	1	REEL, SUPPLY	
10	DG1-2075-000 000	C	1	REEL, TAKE UP	
4	DG1-2130-000 000	C	1	P.C.B. ASS'Y, POWER SUPPLY	
6	DG1-2163-000 000	C	1	P.C.B. ASS'Y, E.V.F.	
2	DG1-2172-000 000	B	1	COVER, REAR	
2	DG1-2174-000 000	B	1	FINDER ASS'Y	
2	DG1-2176-000 000	B	1	COVER, LS	
2	DG1-2177-000 000	B	1	CAP, LENS	
12	DG1-2280-000 000	E	1	DRUM ASS'Y	
12	DG1-2331-010 000	C	1	P4 BASE ASS'Y	
4	DG1-3091-000 000	C	1	P.C.B. ASS'Y, JACK	
4	DG1-3094-000 000	C	1	P.C.B. ASS'Y, AUDIO	
4	DG1-3095-000 000	C	1	P.C.B. ASS'Y, CAMERA MAIN	
4	DG1-3096-000 000	C	1	P.C.B. ASS'Y, RECORDER MAIN	
2	DG1-3100-000 000	B	1	COVER, FRONT	
2	DG1-3105-000 000	C	1	P.C.B. ASS'Y, CAMERA KEY	
4	DG1-3107-000 000	C	1	HOLDER, RECORDER	
2	DG1-3111-000 000	B	1	COVER, CASSETTE	

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
12	DH2-1220-000	000	C	1	PRINTED CORD, DRUM
4	DH2-1532-000	000	C	1	FPC
6	DH2-1533-000	000	C	1	FPC
12	DH2-1601-000	000	C	1	PRINTED CORD, M CHASSIS
10	DH2-1602-000	000	C	1	PRINTED CORD, S CHASSIS
	DH3-0102-000	000	C	1	TRANSFORMER
	DH4-0189-000	000	B	1	IC CXA1127M
	DH4-0196-000	000	B	1	IC CXA1203N
	DH4-0200-000	000	B	2	IC CXA1234AR
	DH4-0264-000	000	B	1	IC CXA1208R
	DH4-0297-000	000	B	2	IC CXL1506
	DH4-0318-000	000	B	1	IC CXA1127AM
	DH4-0372-000	000	B	1	IC μ PD6451AGT-810
	DH4-0389-000	000	B	1	IC PST574C
	DH4-0390-000	000	B	1	IC LD5088
	DH4-0406-000	000	B	1	IC LD5090
	DH4-0411-000	000	B	1	IC MM1058XF
	DH4-0510-000	000	B	1	IC MC13400FUEF
	DH4-0511-000	000	B	1	IC CXD2107M
	DH4-0514-000	000	B	1	IC CXA1207AR
	DH4-0525-000	000	B	1	IC SC405631FB
	DH4-0549-002	000	B	1	IC CXP80624-117Q
	DH4-0564-000	000	B	1	IC CXA1481AR
10	DH9-0468-000	000	C	1	SWITCH, PUSH
10	DH9-0469-000	000	B	2	PHOTO REFLECTOR
10	DH9-0470-000	000	B	1	LED GL452
10	DH9-0508-000	000	B	2	PHOTO TRANSISTOR PT4850F
10	DH9-0509-000	000	C	1	SWITCH
4	DH9-0554-000	000	C	1	LITHIUM BATTERY
	DH9-0555-000	000	D	3	LINK, IC FRF-1600-P005
4	DH9-0574-000	000	C	1	PIN JACK
	DH9-0602-000	000	B	1	REMOTE CONTROL P.C.B. ASS'Y
4	DH9-0603-000	000	C	1	CRYSTAL FILTER
4	DH9-0607-001	000	C	1	JACK, AV
	DH9-0615-000	000	D	1	COIL, LINEARITY
	DH9-0616-000	000	C	1	OSCILLATR, CRYSTAL (4.43MHz)
	DH9-0621-000	000	C	1	OSCILLATR, CRYSTAL (17.7MHz)
	DH9-0622-000	000	C	1	OSCILLATR, CRYSTAL (28.4MHz)
	DH9-0625-000	000	C	1	LED SLH -34VT144F
2	DH9-0627-000	000	B	1	MICROPHONE ASS'Y
	DH9-0633-000	000	D	1	FLYBACK TRANSFORMER
10	DS1-5216-000	000	C	1	SPRING, COIL
2	DS1-5243-000	000	C	1	SPRING, COIL
8	DS1-5250-000	000	C	1	SPRING, COIL
8	DS1-5251-000	000	C	1	SPRING, COIL
10	DS1-5252-000	000	C	1	SPRING, COIL
10	DS1-5253-000	000	C	1	SPRING, COIL
10	DS1-5254-000	000	C	1	SPRING, COIL
6	DS1-5255-000	000	C	1	SPRING, COIL
10	DS1-6070-000	000	C	1	SPRING, COIL
10	DS1-6081-000	000	C	1	SPRING, COIL
8	DY1-7212-000	000	C	1	SLIDE CHASSIS ASS'Y
8	DY1-7213-000	000	C	1	MAIN CHASSIS ASS'Y
12	DY1-7309-000	000	E	1	UPPER DRUM ASS'Y
14	DY1-7353-000	000	B	1	WIRELESS CONTROLLER WL-51EXP
6	DY1-7354-000	000	B	1	COVER, TOP E.V.F.
6	DY1-7356-000	000	C	1	ZOOM LENS ASS'Y
6	DY1-7357-000	000	B	1	COVER, BOTTOM E.V.F.
2	DY1-7361-000	000	B	1	KNOB, T/W
2	DY1-7381-000	000	B	1	COVER, TOP

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
2	DY1-7384-000	000	B	1	COVER, LEFT
4	DY1-7386-000	000	B	1	CCD ASS'Y
2	DY1-7389-000	000	B	1	SOCKET, TRIPOD
12	DY2-1400-000	000	C	1	POST 10 ASS'Y
12	DY2-1409-000	000	C	1	MOTOR, DRUM
14	DY3-4201-000	000	B	1	CAP, LENS
14	DY3-4209-000	000	B	1	CAP, DUST (WD-37)
14	DY3-4210-000	000	B	1	CAP, DUST (TL-37)
14	DY4-2984-000	000	B	1	COVER, BATTERY
	VC6-0340-200	000	C	2	CAPACITOR, TRIMMER 20pF
	VC6-0340-300	000	C	1	CAPACITOR, TRIMMER 30pF
	VC7-1360-102	000	D	1	CAPACITOR, CERA 1000pF/1KV
	VC7-1380-152	000	D	1	CAPACITOR, CERA 1500pF/500V
	VC7-1430-562	000	D	2	CAPACITOR, CERA 5600pF/125V
	VR5-7780-102	000	C	3	RESISTOR, VARIABLE 1K Ω
	VR5-7780-103	000	C	4	RESISTOR, VARIABLE 10K Ω
	VR5-7780-223	000	C	1	RESISTOR, VARIABLE 22K Ω
	VR5-7780-472	000	C	1	RESISTOR, VARIABLE 4.7K Ω
	VR7-0710-105	000	C	1	RESISTOR, VARIABLE 1M Ω
	VR7-2100-201	000	C	1	RESISTOR, VARIABLE 200 Ω
	VR7-2100-333	000	C	1	RESISTOR, VARIABLE 33K Ω
	VR7-2170-305	000	D	1	RESISTOR, VARIABLE 3M Ω /200V
	VR7-3180-102	000	C	3	RESISTOR, VARIABLE 1K Ω
	VR7-3180-223	000	C	5	RESISTOR, VARIABLE 22K Ω
	VR7-3180-471	000	C	2	RESISTOR, VARIABLE 470 Ω
	VR7-3180-472	000	C	12	RESISTOR, VARIABLE 4.7K Ω
	VR7-3180-473	000	C	2	RESISTOR, VARIABLE 47K Ω
	VR7-3180-474	000	C	1	RESISTOR, VARIABLE 470K Ω
	VS1-5051-006	000	C	1	CONNECTOR 6P
	VS1-5149-015	000	C	1	CONNECTOR 15P
	VS1-5256-008	000	C	1	CONNECTOR 8P
	VS1-5256-016	000	C	2	CONNECTOR 16P
	VS1-5256-020	000	C	2	CONNECTOR 20P
	VS1-5316-015	000	C	1	CONNECTOR 15P
	VS1-5347-008	000	C	2	CONNECTOR 8P
6	VS1-5446-006	000	C	1	CONNECTOR 6P
	VS1-5469-010	000	C	1	CONNECTOR 10P
	VS1-5469-016	000	C	1	CONNECTOR 16P
	VS1-5469-018	000	C	1	CONNECTOR 18P
	VS1-5469-020	000	C	1	CONNECTOR 20P
	VS1-5469-028	000	C	1	CONNECTOR 28P
	VS1-5470-018	000	C	1	CONNECTOR 18P
	VS1-5470-020	000	C	1	CONNECTOR 20P
	VS1-5470-028	000	C	1	CONNECTOR 28P
	VS1-5471-010	000	C	1	CONNECTOR 10P
	VS1-5471-016	000	C	1	CONNECTOR 16P
	WAl-0989-000	000	B	10	DIODE, ZENER MA3100
	WAl-1084-000	000	B	7	DIODE MA110
	WAl-1123-000	000	B	1	DIODE AG01Z
	WAl-5122-000	000	B	7	DIODE DAN222
	WAl-5227-000	000	B	2	DIODE 1SS362
	WAl-5231-000	000	B	3	DIODE DAP222
	WAl-5232-000	000	B	2	DIODE HN2D01FU
	WAl-5236-000	000	B	1	DIODE DA221
	WAl-5249-000	000	B	1	DIODE 1SV223
	WAl-5350-000	000	B	1	DIODE MA724
	WAl-9003-000	000	B	1	DIODE SB05-05CP
	WA2-0411-000	000	B	1	TRANSISTOR 2SA1314BC
	WA2-0839-000	000	B	1	TRANSISTOR 2SA1226
	WA2-1132-000	000	B	1	TRANSISTOR FMA2-T98

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PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	WA2-1198-000	000	B 1	TRANSISTOR IMD2	
	WA2-1235-000	000	B 1	TRANSISTOR IMB6	
	WA2-1337-000	000	B 5	TRANSISTOR 2SC4081	
	WA2-1400-000	000	B 2	TRANSISTOR 2SA1576	
	WA2-1406-000	000	B 1	TRANSISTOR DTC124EU	
	WA2-1498-000	000	B 1	TRANSISTOR 2SA1162	
	WA2-5139-000	000	B 28	TRANSISTOR DTC144EE	
	WA2-5141-000	000	B 16	TRANSISTOR 2SA1774	
	WA2-5142-000	000	B 28	TRANSISTOR 2SC4617	
	WA2-5147-000	000	B 6	TRANSISTOR UMZ1	
	WA2-5149-000	000	B 1	TRANSISTOR 2SB1412F5	
	WA2-5155-000	000	B 1	TRANSISTOR DTA114EE	
	WA2-5160-000	000	B 7	TRANSISTOR UMT2	
	WA2-5161-000	000	B 13	TRANSISTOR UMX2	
	WA2-5162-000	000	B 5	TRANSISTOR UMH5	
	WA2-5165-000	000	B 6	TRANSISTOR UMD2	
	WA2-5169-000	000	B 4	FET 2SK880	
	WA2-5206-000	000	B 1	TRANSISTOR DTA124EE	
	WA2-5266-000	000	B 2	TRANSISTOR UMW1	
	WA2-5272-000	000	B 3	TRANSISTOR IMH14	
	WA2-5290-000	000	B 4	TRANSISTOR FP101	
	WA2-5301-000	000	B 2	TRANSISTOR UMH8	
	WA2-5306-000	000	B 1	TRANSISTOR DTA143EE	
	WA2-5307-000	000	B 5	TRANSISTOR 2SC4649	
	WA2-5312-000	000	B 1	TRANSISTOR DTA114TE	
	WA2-5313-000	000	B 2	TRANSISTOR UMB8	
	WA2-5314-000	000	B 9	TRANSISTOR UMH6	
	WA2-5315-000	000	B 4	TRANSISTOR UMB5	
	WA2-5323-000	000	B 1	TRANSISTOR UMX5	
	WA2-5346-000	000	B 4	TRANSISTOR 2SA1362	
	WA2-5347-000	000	B 1	TRANSISTOR RN2427	
	WA2-5360-000	000	B 1	FET 2SK662QR	
	WA2-5419-000	000	B 1	TRANSISTOR 2SB1122	
	WA2-5423-000	000	B 1	TRANSISTOR 2SD968-S	
	WA3-4264-000	000	B 3	IC SC14S66F	
	WA3-5657-000	000	B 1	IC SC14S70F	
	WA3-6006-000	000	B 1	IC MC14013BF	
	WA3-6112-000	000	B 1	IC RTC-4553A	
	WA3-6307-000	000	B 1	IC MB88344	
	WA3-6369-000	000	B 1	IC CXD1256R	
	WA3-6392-000	000	B 1	IC μ PD16506GR	
	WA3-6436-000	000	B 1	IC NJU4066BV	
	WA4-0907-000	000	B 1	IC BA6303F	
	WA4-1145-000	000	B 1	IC RH5VA45AA	
	WA4-1248-000	000	B 1	IC μ PC324G2	
	WA4-5044-000	000	B 1	IC CXD1159Q	
	WA4-5129-000	000	B 1	IC S-87050AF	
	WA4-5316-000	000	B 2	IC TK11447	
	WA4-5336-000	000	B 1	IC MPC1720ML2	
	WA4-5337-000	000	B 1	IC LB1837M	
	WA4-5350-000	000	B 1	IC CXA1390AR	
	WA4-5351-000	000	B 1	IC CXA1391R	
	WA4-5352-000	000	B 1	IC CXA1392R	
	WA4-5353-000	000	B 1	IC CXL1507N	
	WA4-5354-000	000	B 1	IC CXL5504M	
	WA4-5365-000	000	B 1	IC LA7456M	
	WA4-5402-000	000	B 1	IC RH5RA35AA	
	WA4-5403-000	000	B 1	IC RH5VA45CA	
	WA4-5413-000	000	B 1	IC NJM2902V	
	WA4-5424-000	000	B 1	IC LM311DB	

A

PARTS LIST

PAGE	PART NO.	CLASS	QTY	DESCRIPTION	REMARKS
	WA4-5428-000 000	B	1	IC BA7149F	
	WA4-5435-000 000	B	2	IC LA7454W	
	WA4-5443-000 000	B	1	IC NJM2246M	
	WA4-5480-000 000	B	1	IC LM324N	
	WA4-5516-000 000	B	1	IC TB6504F	
	WA4-5518-000 000	B	1	IC MB3785PFV	
	WA4-5525-000 000	B	1	IC LA7470V	
	WA4-5566-000 000	B	1	IC CXA1512N	
	WC3-5040-000 000	C	1	SWITCH, SLID	
6	WG8-5043-000 000	C	2	PHOTO INTERRUPTER	
	WK2-5262-000 000	C	1	OSCILLATOR, CRYSTAL (11.7MHz)	
	WK2-5269-000 000	C	1	OSCILLATOR, CRYSTAL (1.056MHz)	
	WK2-5294-000 000	C	1	OSCILLATOR, SERAMIC (16MHz)	
4	WS6-5001-000 000	C	1	JACK, MIC	
4	WS6-5007-000 000	C	1	TERMINAL, S	
12	XA1-1140-147 000	F	4	SCREW	
12	XA1-1140-259 000	F	3	SCREW	
12	XA1-1140-307 000	F	3	SCREW	
10,12	XA1-7140-147 000	F	2	SCREW	
8,10	XA1-7140-229 000	F	6	SCREW	
8,12	XA1-7140-257 000	F	6	SCREW	
10	XA1-7140-307 000	F	4	SCREW	
8,10,12	XA1-7140-357 000	F	6	SCREW	
2	XA1-7170-209 000	F	1	SCREW	
4	XA1-7170-307 000	F	3	SCREW	
2	XA1-7170-309 000	F	3	SCREW	
6	XA4-4170-457 000	F	6	SCREW	
6	XA4-6170-459 000	F	4	SCREW	
6	XA4-6170-559 000	F	1	SCREW	
6	XA4-6170-659 000	F	1	SCREW	
2	XA4-9170-229 000	F	1	SCREW	
2	XA4-9170-359 000	F	1	SCREW	
2,4	XA4-9170-409 000	F	35	SCREW	
2	XA4-9170-509 000	F	4	SCREW	
2	XA4-9170-609 000	F	2	SCREW	
6	XA4-9170-807 000	F	2	SCREW	
4	XA9-0549-000 000	F	5	SCREW	
4	XA9-0568-000 000	F	2	SCREW	
4	XA9-0609-000 000	F	3	SCREW	
2	XA9-0645-000 000	F	2	SCREW	
4	XA9-0649-000 000	F	1	SCREW	
12	XD2-1100-102 000	F	1	E RING	
8,10	XD2-1100-132 000	F	3	WASHER	
12	XD2-1100-172 000	F	1	E RING	
6	XG8-1100-582 000	C	1	BALL, STEEL	
6	YA1-0886-000 000	C	1	HOLDER, RELAY LENS	
6	YG9-5288-000 000	C	1	LENS, FRONT	
6	YH1-0253-000 000	C	1	FPC	
6	YH7-0060-000 000	C	1	MOTOR, PZ	
6	YH7-0061-000 000	C	1	MOTOR, AF	
6	YH8-0038-000 000	C	1	IG METER	
	Y22-2879-000 000	B	1	IC SC418027FU	

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2-2	SYSCON-SERVO SECTION	N - 3
2-3	AUDIO, VIDEO SECTION	N - 4
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3-2	RECORDER-MAIN & POWER SUPPLY P.C.B. (SYSCON-SERVO SECTION)	N - 8, 9
3-3	RECORDER-MAIN & JACK P.C.B. (VIDEO SECTION)	N - 10, 11
3-4	AUDIO P.C.B.	N - 12, 13
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<Guide to diagrams>

1. Color coding

(1) Signal lines in block diagrams

Camera section

Red (—) : Y
(- - -) : C

AUTO-FOCUS section

Red (—) : ES/CU

Syscon-servo section

Red (—) : Drum servo signal
(- - -) : Capstan servo signal

Video section

Red (—) : Recording
(- - -) : Playback

(2) Voltage on circuit diagram

Red : Recording
Black : Playback

(3) Signal lines in circuit diagrams

Camera section

Red : Power supply line
Blue : Luminance signal
Orange : Chrominance signal
Hatched black (■■■) : Luminance + Chrominance signals

Recorder section

Blue (—) : Capstan PWM signal
(- - -) : Capstan ATF signal
(- - -) : Capstan FG signal
Orange (—) : Drum PWM signal
(- - -) : Drum FG signal
(- - -) : Drum PG signal

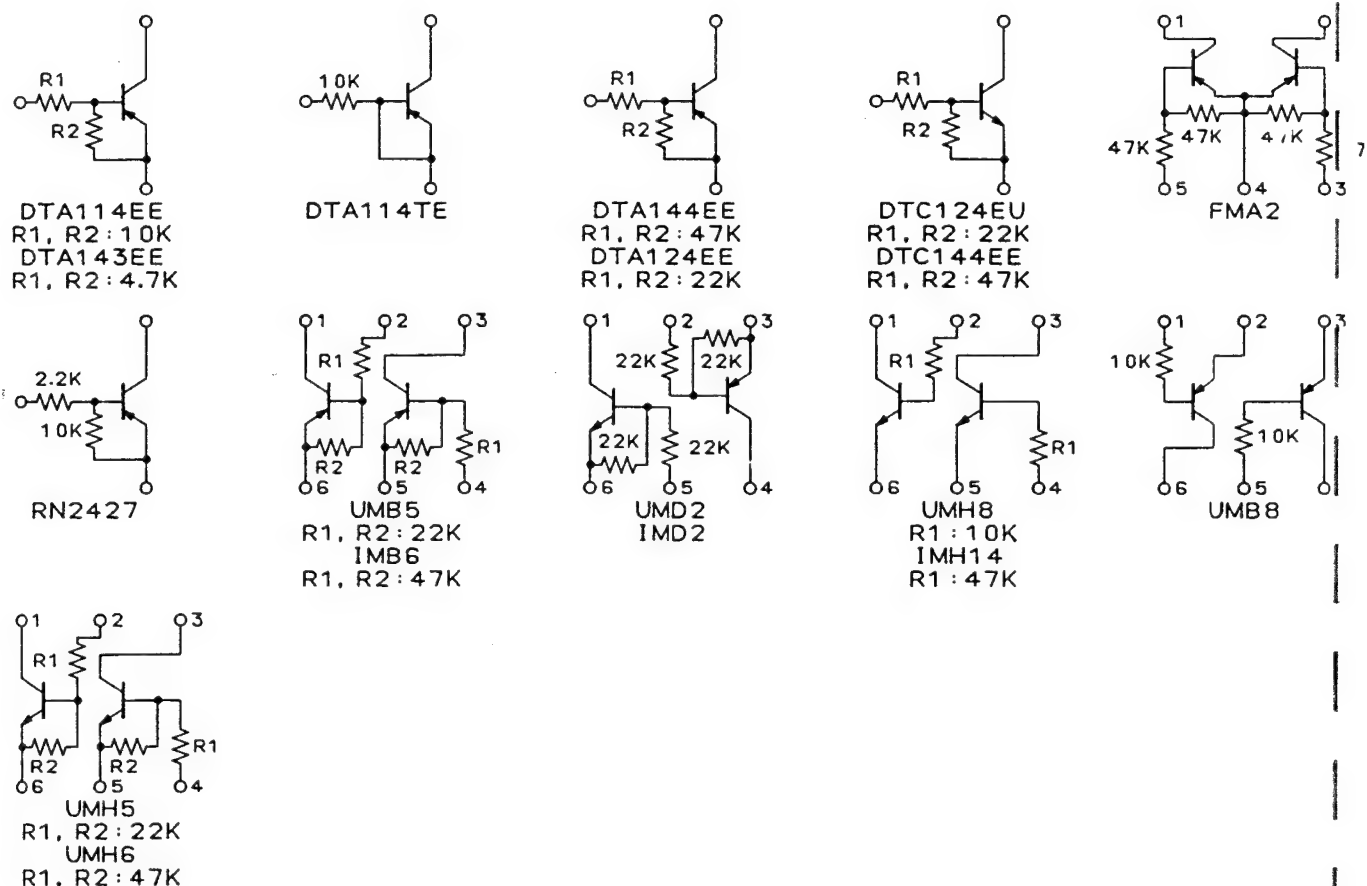
Recorder section

Gray (—) : Recording luminance + Chrominance signals
(- - -) : Playback luminance + Chrominance signals
Blue (—) : Recording luminance signal
(- - -) : Playback luminance signal
(- - -) : Playback capstan ATF signal
Orange (—) : Recording chrominance signal
(- - -) : Playback chrominance signal
Red (—) : Recording audio signal
(- - -) : Playback audio signal

(4) PC board layout

Orange : Component-side pattern
Hatched black (■■■) : Soldered-side pattern
Black : Parts on component-side
Blue : Parts on soldered-side

2. Equivalent circuits of digital transistors



3. Indications in circuit diagram

- Resistance is represented in ohms (Ω).
- Capacitance is represented in farads (F).
- Wattage of resistor is 1/16 W and 1/32 W unless otherwise specified.
- Withstand voltage of capacitor is 25 V unless otherwise specified.
- Voltages are measured with a digital voltmeter.
- Waveform photographs are taken by using a 10:1 probe.
- IC Nos. in P.C.B.s are listed on the bottom of diagrams.
- Nos. colored in blue correspond to the Nos. of waveform photographs.
- Voltage values and waveform photographs in circuit diagram are based on the following condition.

Camera section conditions

Color bar, standard angle of view

Recorder section conditions

Recording : Color bar (pattern generator) Hi8 tape

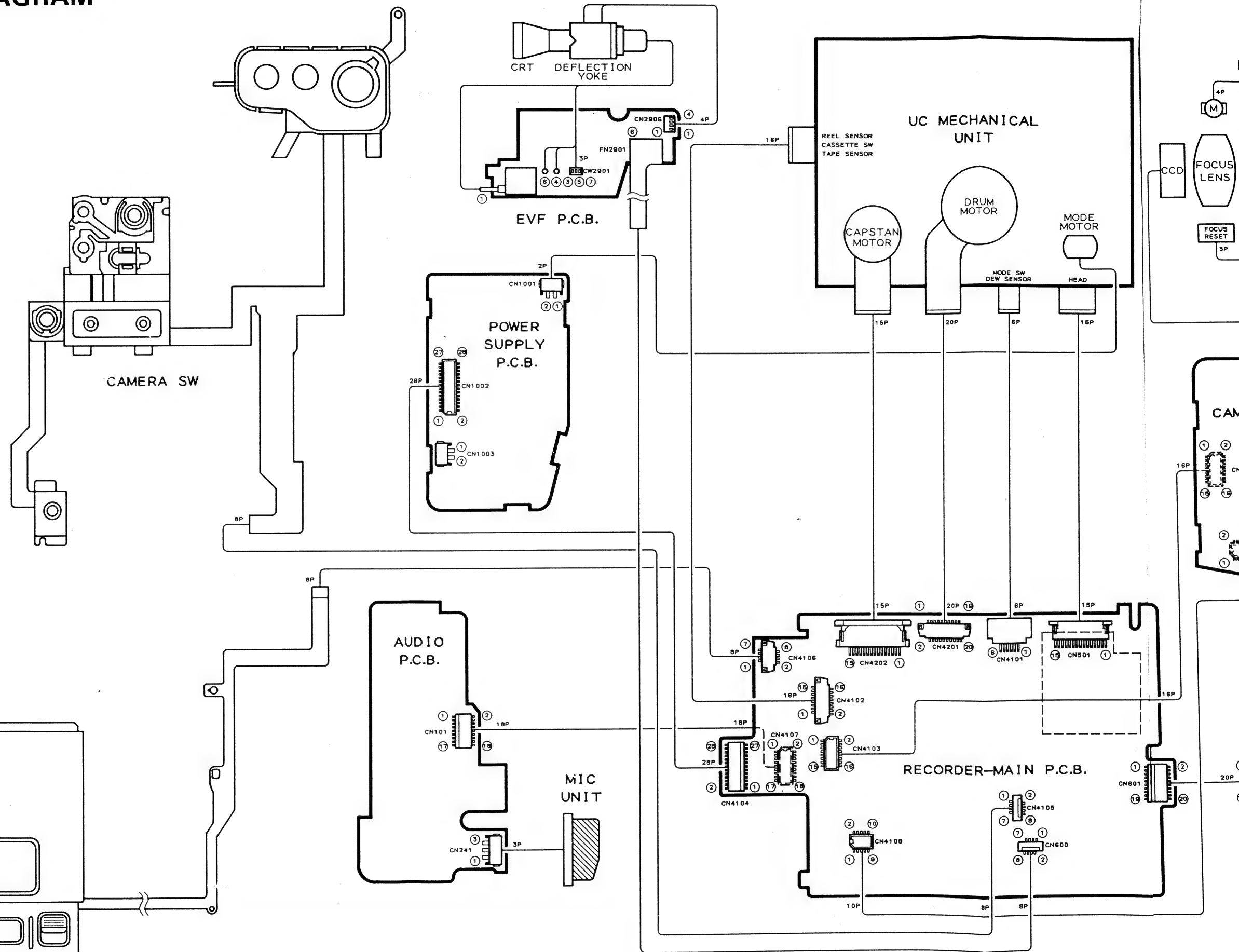
Playback : Self-recording playback (color bar) Hi8 tape

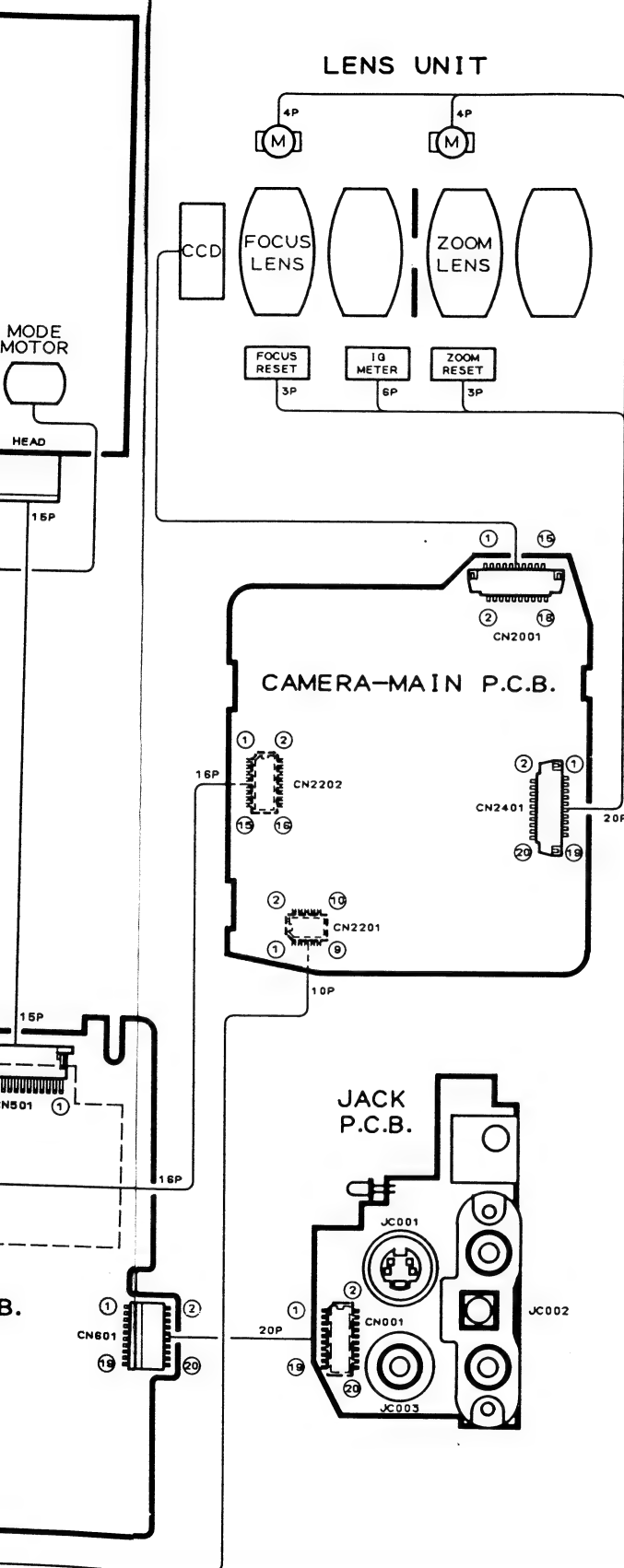
INTERCONNECTION DIAGRAM

EVF P.C.B.	
CN2906	
1 H+ (RED)	
2 H- (BLUE)	
3 V+ (BROWN)	
4 V- (YELLOW)	
CN2901	
1 H.V	
3 K (RED)	
4 G3 (PINK)	
5 G1 (WHITE)	
6 G2 (BLACK)	
7 H (BLUE)	
FN2901	
1 EVF 5V	
2 VIDEO IN	
3 GND	
4 VD	
5 HD	
6 GND	

AUDIO P.C.B.	
CN101	
1 AUDIO FADE (H)	
2 PB RF	
3 GND	
4 REC AUDIO	
5 fsc	
6 GND	
7 AUDIO MUTE (H)	
8 SP (H) / LP (L)	
9 PB (H) / EE (L)	
10 CAMERA (H) / LINE (L)	
11 SW PULSE	
12 VIDEO 5V	
13 VIDEO 5V	
14 GND	
15 AUDIO I/O (L)	
16 AUDIO I/O (R)	
17 GND	
18 R TERMINAL IN (L)	
CN241	
1 MIC Lch	
2 GND	
3 MIC Rch	

POWER SUPPLY P.C.B.	
CN1001	
1 LOAD MTR (+)	
2 LOAD MTR (-)	
CN1002	
1 UNREG 6V	
2 LITHIUM 3V	
3 GND	
4 VIDEO 5V	
5 S55V	
6 GND	
7 NC	
8 EVF 5V	
9 CAMERA ON (L)	
10 DRUM ERROR	
11 GND	
12 VTR ON (L)	
13 GND	
14 CAMERA 5V	
15 UNREG 6V	
16 UNREG 6V	
17 GND	
18 GND	
19 +15V	
20 -9V	
21 LOAD (L)	
22 UNLOAD (L)	
23 DRUM VS	
24 CAPSTAN VS	
25 LOAD CONT (H)	
26 LOAD SENS.	
27 CAPSTAN PWM	
28 DRUM PWM	
CN1003	
1 GND	
2 UNREG 6V	





CAMERA-MAIN P.C.B.	
CN2001	
1	V4
2	V3
3	V2
4	V1
5	GND
6	VGG
7	VSS
8	V IN
9	H2
10	H1
11	NC
12	RG
13	VL
14	SUB
15	GND
16	VDD
CN2201	
1	CAMERA (Y)
2	CAMERA (C)
3	GND
4	GND
5	AUDIO FADE
6	NC
7	NC
8	NC
9	FOCUS FRAME
10	NC
CN2202	
1	UNREQ 6V
2	UNREQ 6V
3	GND
4	GND
5	CAMERA 5V
6	CAMERA 5V
7	+15V
8	-9V
9	GND
10	GND
11	S-CLOCK
12	S-DATA IN
13	S-DATA OUT
14	CAMERA REQ
15	CAMERA CS
16	EEP ON
CN2401	
1	FOCUS A
2	FOCUS A
3	FOCUS B
4	FOCUS B
5	DRIVE (+)
6	DRIVE (-)
7	HALL OUT (+)
8	BIAS (+)
9	HALL OUT (-)
10	BIAS (-)
11	LED 1
12	FOCUS RESET
13	CAMERA 5V
14	ZOOM A
15	ZOOM A
16	ZOOM B
17	ZOOM B
18	CAMERA 5V
19	LED 2
20	ZOOM RESET

RECORDER-MAIN P.C.B.	
CN501	
1	FE HEAD
2	GND
3	GND
4	VIDEO 5V
5	CH-3
6	GND
7	VIDEO 5V
8	CH-4
9	GND
10	VIDEO 5V
11	CH-2
12	GND
13	VIDEO 5V
14	CH-1
15	GND
CN600	
1	GND
2	GND
3	HD
4	VD
5	GND
6	VIDEO OUT
7	EVF 5V
8	EVF 5V
CN601	
1	TALLY
2	GND
3	REMOCON DATA
4	SS 5V
5	A/D CANCEL
6	C LED
7	GND
8	RF 5V
9	VIDEO I/O
10	GND
11	POWER SW
12	Y I/O
13	GND
14	C I/O
15	S TERMINAL IN
16	R TERMINAL IN
17	AUDIO I/O (L)
18	GND
19	AUDIO I/O (R)
20	GND
CN4101	
1	GND
2	MODE SW 1
3	MODE SW 2
4	MODE SW 3
5	GND
6	DEW
CN4102	
1	TAPE LED (+)
2	TAPE LED (-)
3	REEL VCC
4	GND
5	T REEL SENS.
6	S REEL SENS.
7	EOT SENS
8	SS 5V
9	GND
10	MP /ME
11	HIMP
12	REC PROOF
13	CASSETTE IN
14	GND
15	BOT SENS
16	SS 5V
CN4103	
1	UNREQ 6V
2	UNREQ 6V
3	GND
4	GND
5	CAMERA 5V
6	CAMERA 5V
7	+15V
8	-9V
9	GND
10	GND
11	S-CLOCK
12	S-DATA IN
13	S-DATA OUT
14	CAMERA REQ
15	CAMERA CS
16	NC

RECORDER-MAIN P.C.B.	
CN4104	
1	UNREQ 6V
2	LITHIUM 3V
3	GND
4	VIDEO 5V
5	SS 5V
6	GND
7	NC
8	EVF 5V
9	CAMERA ON
10	NC
11	GND
12	VTR ON
13	GND
14	CAMERA 5V
15	UNREQ 6V
16	UNREQ 6V
17	GND
18	GND
19	+15V
20	-9V
21	LOAD
22	UNLOAD
23	DRUM VS
24	CAPSTAN VS
25	LOAD CONT
26	LOAD SENS.
27	CAPSTAN PWM
28	DRUM PWM
CN4105	
1	POWER SW
2	TRIG SW
3	GND
4	ZOOM KEY IN
5	SS 5V
6	AE KEY IN
7	EVER 5V
8	C-KEY IN
CN4106	
1	EJECT SW
2	SS 5V
3	R-KEY IN
4	PLAY LED
5	EVER 5V
6	CAMERA LED
7	KEY +/-
8	GND
CN4107	
1	AUDIO FADE
2	PB-RF
3	GND
4	REC AUDIO
5	fsc
6	GND
7	AUDIO MUTE
8	SP /LP
9	PB /EE
10	CAMERA /LINE
11	SW PULSE
12	VIDEO 5V
13	VIDEO 5V
14	GND
15	AUDIO I/O (L)
16	AUDIO I/O (R)
17	GND
18	R TERMINAL IN
CN4108	
1	CAMERA (Y)
2	CAMERA (C)
3	GND
4	GND
5	AUDIO FADE
6	1/2 SW PULSE
7	GND
8	PB-RF
9	NC
10	JITTER ERROR MIX
CN4201	
1	W
2	W
3	V
4	V
5	U
6	U
7	V+
8	V-
9	W+
10	W-
11	COM
12	DRUM-FG
13	DRUM-PG
14	NC
15	U-
16	U+
17	H+
18	H-
19	NC
20	NC

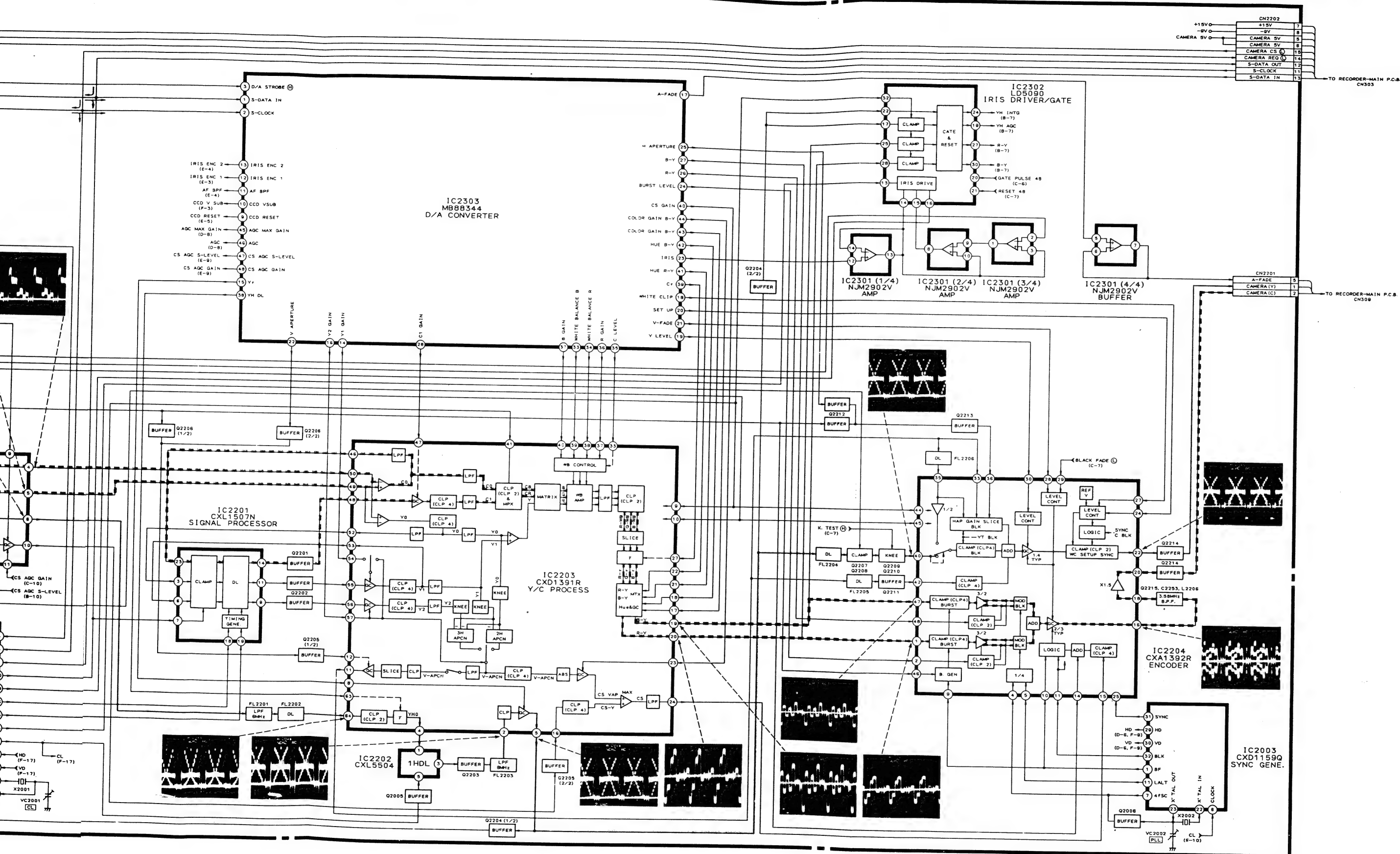
RECORDER-MAIN P.C.B.	
CN4202	
1	V+
2	H+
3	U
4	U+
5	U-
6	V-
7	H-
8	W+
9	W-
10	V
11	SS 5V
12	CAPSTAN-FG1
13	W
14	CAPSTAN-FG2
15	GND

JACK P.C.B.	
CN001	
1	TALLY
2	GND
3	REMOCON DATA
4	SS 5V
5	A/D CANCEL
6	CAMERA LED
7	GND
8	RF 5V
9	VIDEO I/O
10	GND
11	POWER SW
12	Y I/O
13	GND
14	C I/O
15	S TERMINAL IN
16	R TERMINAL IN
17	AUDIO I/O (L)
18	GND
19	AUDIO I/O (R)
20	GND

CAMERA-MAIN P.C.B.

Legend:
 ○ SIGNAL PATH
 — Y+C SIGNAL
 — Y SIGNAL
 - - - C SIGNAL

IC2401 LD5088 AF PROCESS
 1. ZOOM A, 2. ZOOM B, 3. ZOOM C, 4. ZOOM D, 5. ZOOM E, 6. ZOOM F, 7. ZOOM G, 8. ZOOM H, 9. ZOOM I, 10. ZOOM J, 11. ZOOM K, 12. ZOOM L, 13. ZOOM M, 14. ZOOM N, 15. ZOOM O, 16. ZOOM P, 17. ZOOM Q, 18. ZOOM R, 19. ZOOM S, 20. ZOOM T, 21. ZOOM U, 22. ZOOM V, 23. ZOOM W, 24. ZOOM X, 25. ZOOM Y, 26. ZOOM Z, 27. ZOOM A, 28. ZOOM B, 29. ZOOM C, 30. ZOOM D, 31. ZOOM E, 32. ZOOM F, 33. ZOOM G, 34. ZOOM H, 35. ZOOM I, 36. ZOOM J, 37. ZOOM K, 38. ZOOM L, 39. ZOOM M, 40. ZOOM N, 41. ZOOM O, 42. ZOOM P, 43. ZOOM Q, 44. ZOOM R, 45. ZOOM S, 46. ZOOM T, 47. ZOOM U, 48. ZOOM V, 49. ZOOM W, 50. ZOOM X, 51. ZOOM Y, 52. ZOOM Z, 53. ZOOM A, 54. ZOOM B, 55. ZOOM C, 56. ZOOM D, 57. ZOOM E, 58. ZOOM F, 59. ZOOM G, 60. ZOOM H, 61. ZOOM I, 62. ZOOM J, 63. ZOOM K, 64. ZOOM L, 65. ZOOM M, 66. ZOOM N, 67. ZOOM O, 68. ZOOM P, 69. ZOOM Q, 70. ZOOM R, 71. ZOOM S, 72. ZOOM T, 73. ZOOM U, 74. ZOOM V, 75. ZOOM W, 76. ZOOM X, 77. ZOOM Y, 78. ZOOM Z, 79. ZOOM A, 80. ZOOM B, 81. ZOOM C, 82. ZOOM D, 83. ZOOM E, 84. ZOOM F, 85. ZOOM G, 86. ZOOM H, 87. ZOOM I, 88. ZOOM J, 89. ZOOM K, 90. ZOOM L, 91. ZOOM M, 92. ZOOM N, 93. ZOOM O, 94. ZOOM P, 95. ZOOM Q, 96. ZOOM R, 97. ZOOM S, 98. ZOOM T, 99. ZOOM U, 100. ZOOM V, 101. ZOOM W, 102. ZOOM X, 103. ZOOM Y, 104. ZOOM Z, 105. ZOOM A, 106. ZOOM B, 107. ZOOM C, 108. ZOOM D, 109. ZOOM E, 110. ZOOM F, 111. ZOOM G, 112. ZOOM H, 113. ZOOM I, 114. ZOOM J, 115. ZOOM K, 116. ZOOM L, 117. ZOOM M, 118. ZOOM N, 119. ZOOM O, 120. ZOOM P, 121. ZOOM Q, 122. ZOOM R, 123. ZOOM S, 124. ZOOM T, 125. ZOOM U, 126. ZOOM V, 127. ZOOM W, 128. ZOOM X, 129. ZOOM Y, 130. ZOOM Z, 131. ZOOM A, 132. ZOOM B, 133. ZOOM C, 134. ZOOM D, 135. ZOOM E, 136. ZOOM F, 137. ZOOM G, 138. ZOOM H, 139. ZOOM I, 140. ZOOM J, 141. ZOOM K, 142. ZOOM L, 143. ZOOM M, 144. ZOOM N, 145. ZOOM O, 146. ZOOM P, 147. ZOOM Q, 148. ZOOM R, 149. ZOOM S, 150. ZOOM T, 151. ZOOM U, 152. ZOOM V, 153. ZOOM W, 154. ZOOM X, 155. ZOOM Y, 156. ZOOM Z, 157. ZOOM A, 158. ZOOM B, 159. ZOOM C, 160. ZOOM D, 161. ZOOM E, 162. 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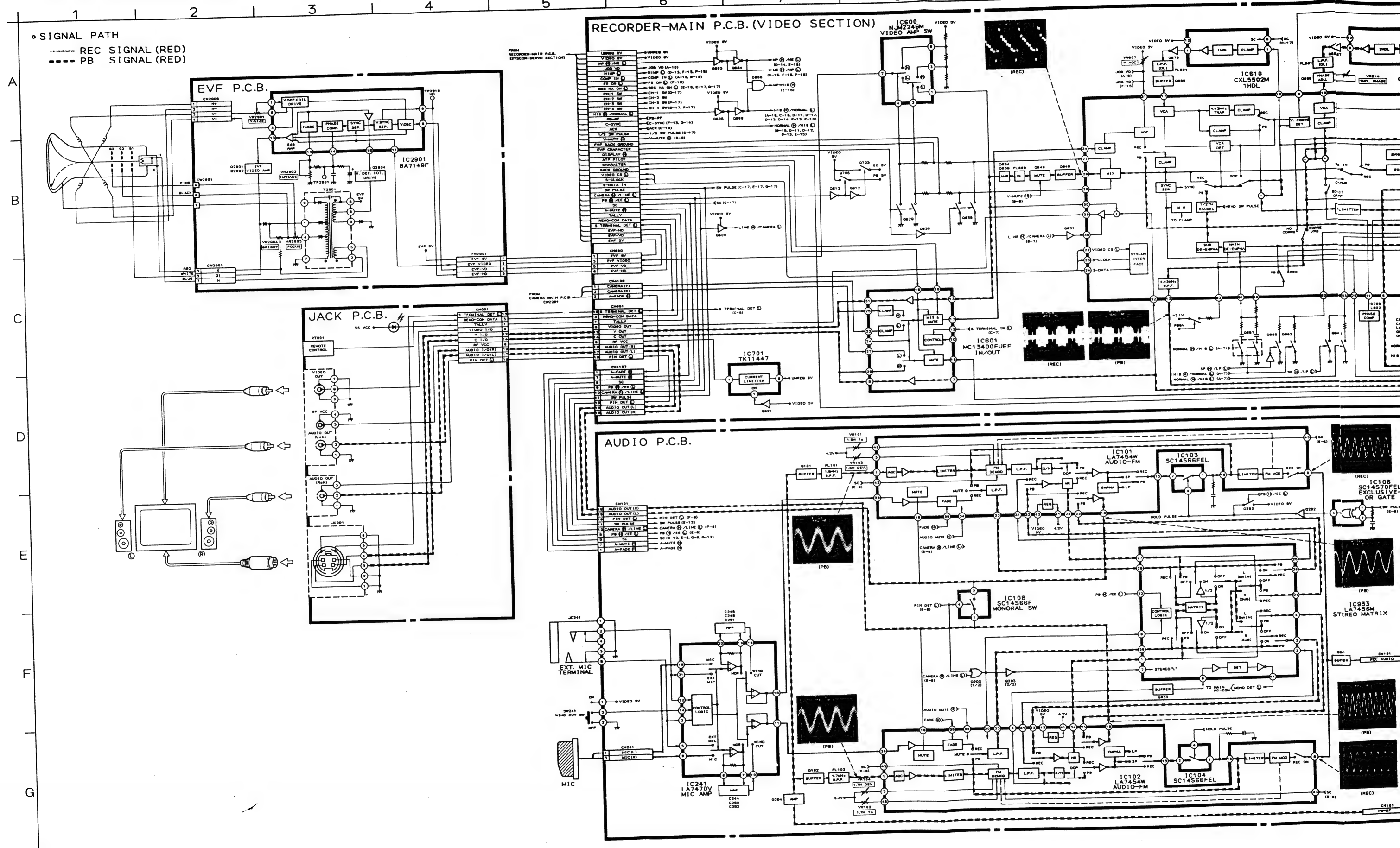


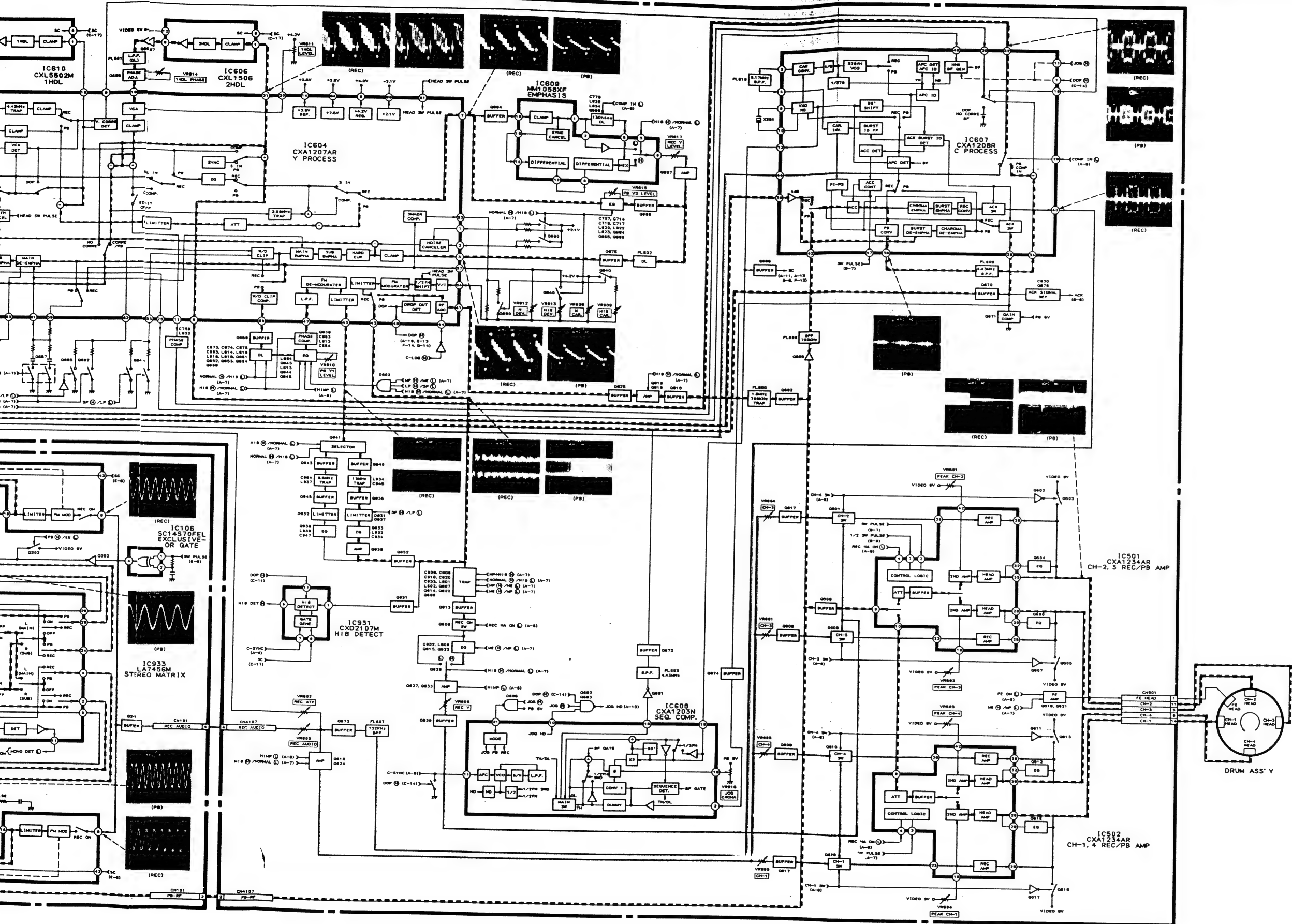
1 2 3 4 5 6 7 8 9 10

SIGNUP PATH ONBOARDING



BLOCK DIAGRAM AUDIO-VIDEO SECTION

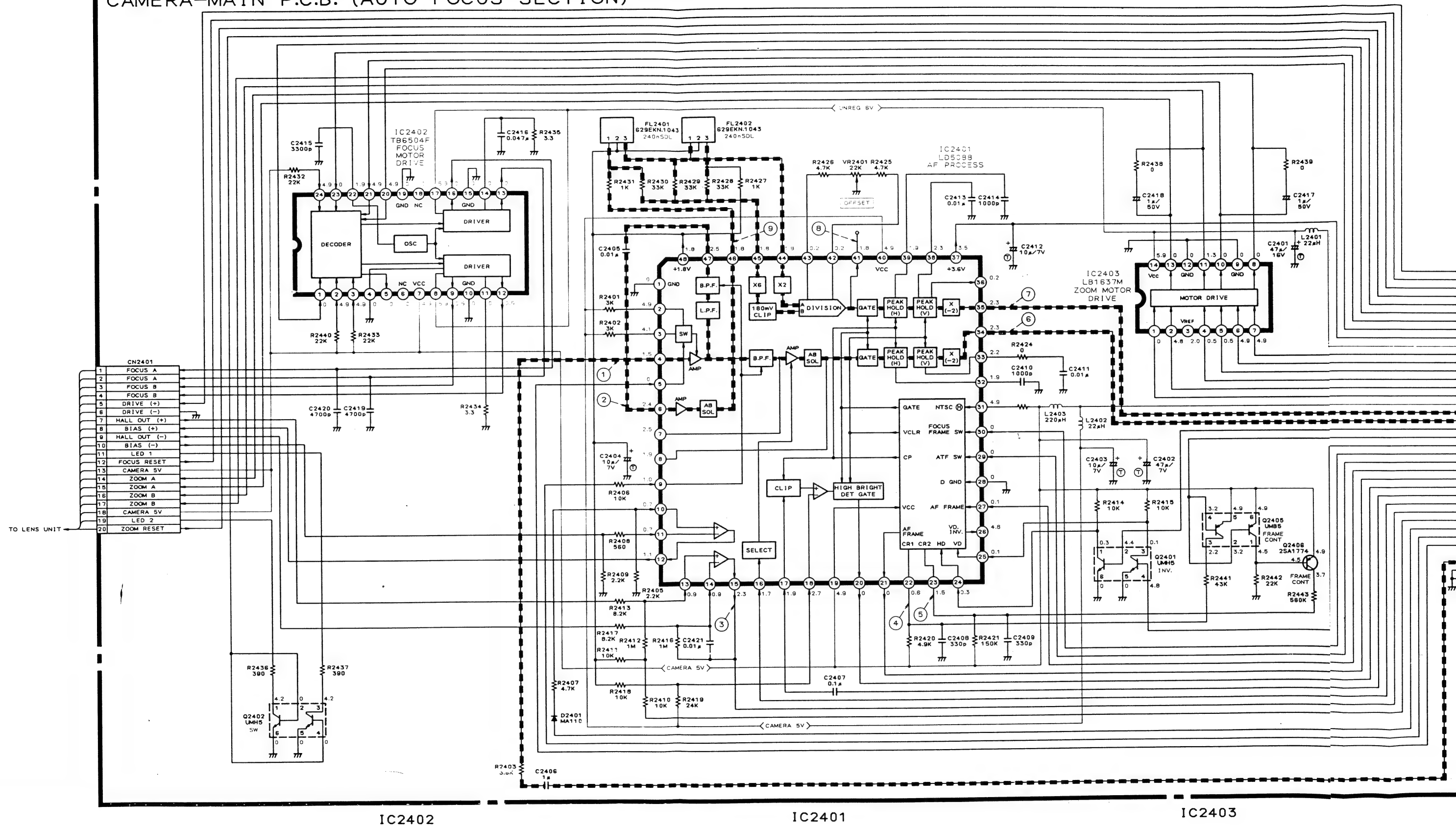




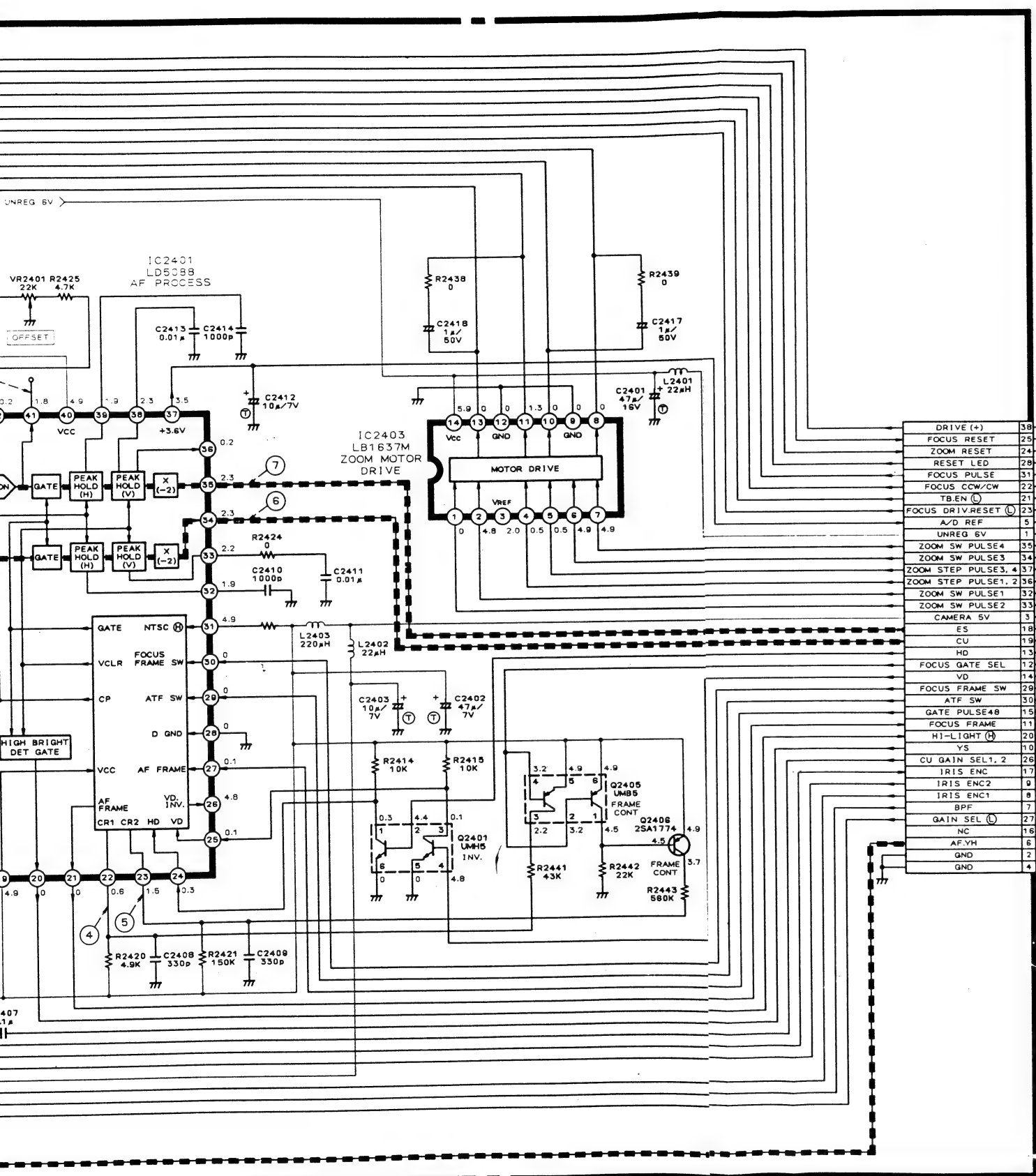
SCHEMATIC DIAGRAM CAMERA-MAIN P.C.B. (AUTO FOCUS SECTION)

SIGNAL PATH - - - - ES.CU SIGNAL (BLUE)

CAMERA-MAIN P.C.B. (AUTO FOCUS SECTION)

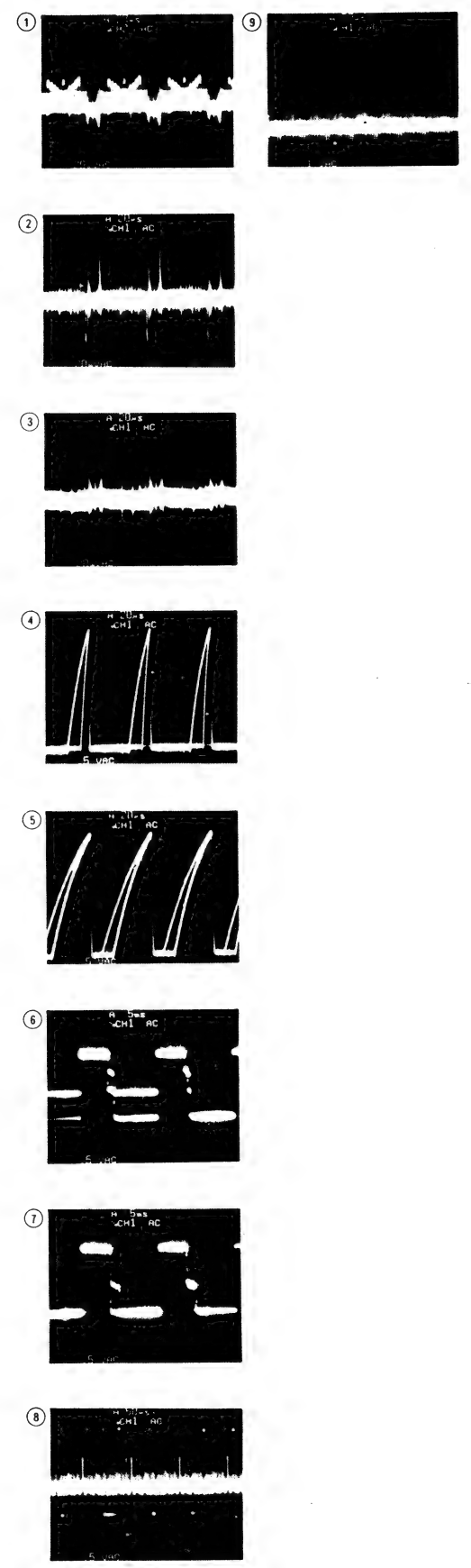


CTION)



IC2403

SIGNAL WAVEFORMS (AUTO FOCUS SECTION)



CIRCUIT BOARD DIAGRAM

CAMERA MAIN P.C.B. (COMPONENT SIDE)

D2001	B-
D2004	C-
IC2003	C-
IC2101	B-
IC2204	E-
IC2301	F-
IC2305	F-
IC2402	D-
Q2203	C-
Q2204	C-
Q2208	D-
Q2209	D-
Q2210	D-
Q2211	D-
Q2212	D-
Q2213	D-
Q2215	F-
VC2001	B-
VC2002	C-
VR2401	D-

< NOTICE >
CAMERA-MAIN P.C.B. consists of four layers
(Soldering, Component, Power Supply and Ground)
※ Through-hole marks on each P.C.B. denote :
○ : Soldering side ↔ Component side
⊙ : Soldering side (Component side) ↔ Ground or Power Supply layer
⊖ : Soldering side (Component side) ↔ Power Supply layer
And, blue lines denote signal patterns which are on the Ground or Power Supply layer.
Blue (——) : Power Supply layer
Blue (----) : Ground layer

CIRCUIT BOARD DIAGRAM CAMERA-MAIN P.C.B.

CAMERA MAIN P.C.B.
(COMPONENT SIDE)

D2001	B-4
D2004	C-4
IC2003	C-4
IC2101	B-2
IC2204	E-2
IC2301	F-2
IC2305	F-4
IC2402	D-4
Q2203	C-3
Q2204	C-1
Q2208	D-2
Q2209	D-2
Q2210	D-2
Q2211	D-2
Q2212	D-2
Q2213	D-2
Q2215	F-1
VC2001	B-4
VC2002	C-4
VR2401	D-4

< NOTICE >

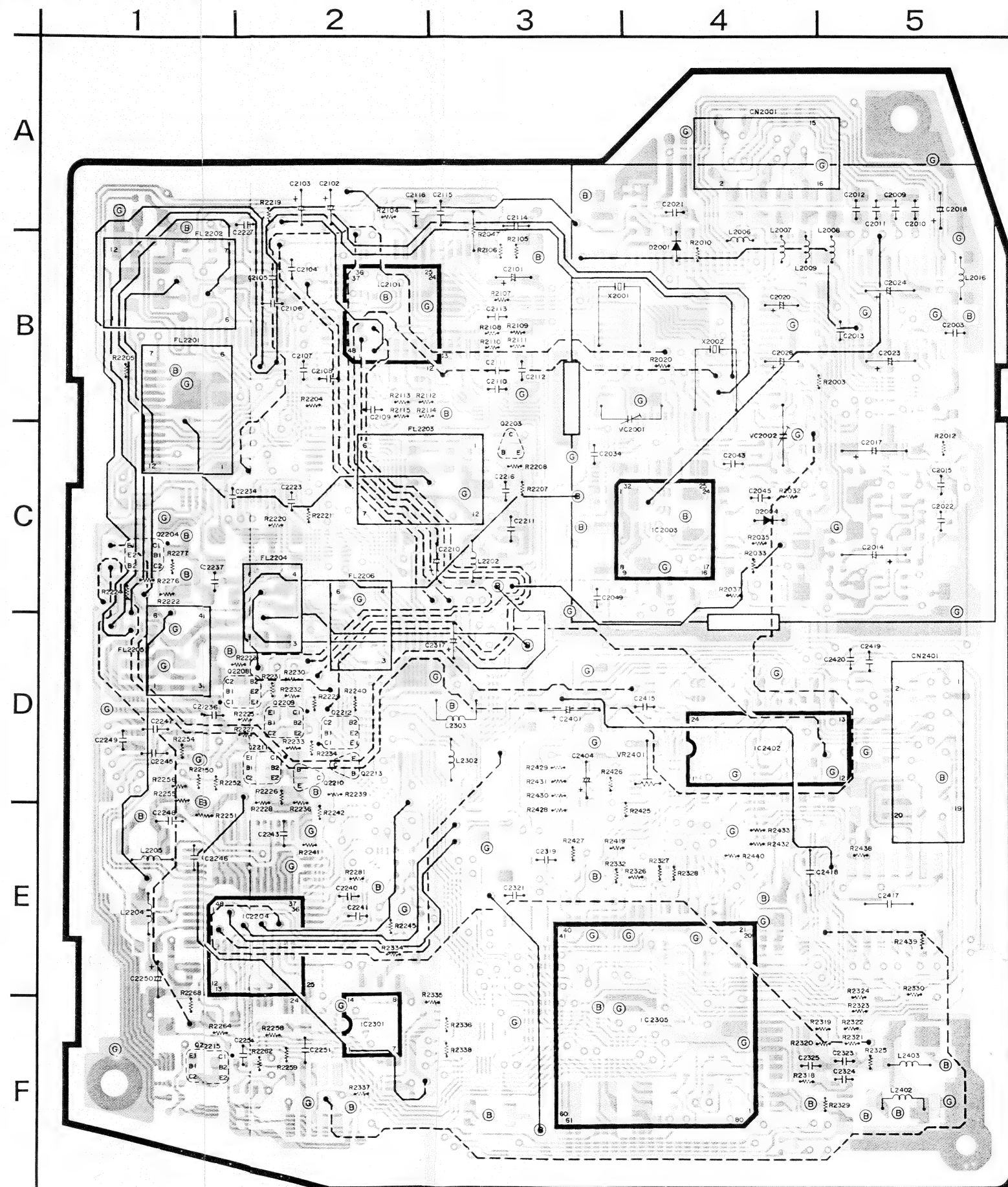
CAMERA-MAIN P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

- : Soldering side ↔ Component side
- ⊙ : Soldering side (Component side) ↔ Ground
- ⊕ : Soldering side (Component side) ↔ Power Supply

And, blue lines denote signal patterns which connected in the
Ground or Power Supply layer.

- Blue (——) : Power Supply layer
- Blue (----) : Ground layer



CIRCUIT BOARD DIAGRAM CAM

CAMERA MAIN P.C.B. (SOLDER

< NOTICE >

CAMERA-MAIN P.C.B. consists of four layers.

(Soldering, Component, Power Supply and Ground pattern)

※ Through-hole marks on each P.C.B. denote :

○ : Soldering side ↔ Component side

⊙ : Soldering side (Component side) ↔ Ground

⊕ : Soldering side (Component side) ↔ Power Supply

And, blue lines denote signal patterns which connected in

Ground or Power Supply layer.

Blue (——) : Power Supply layer

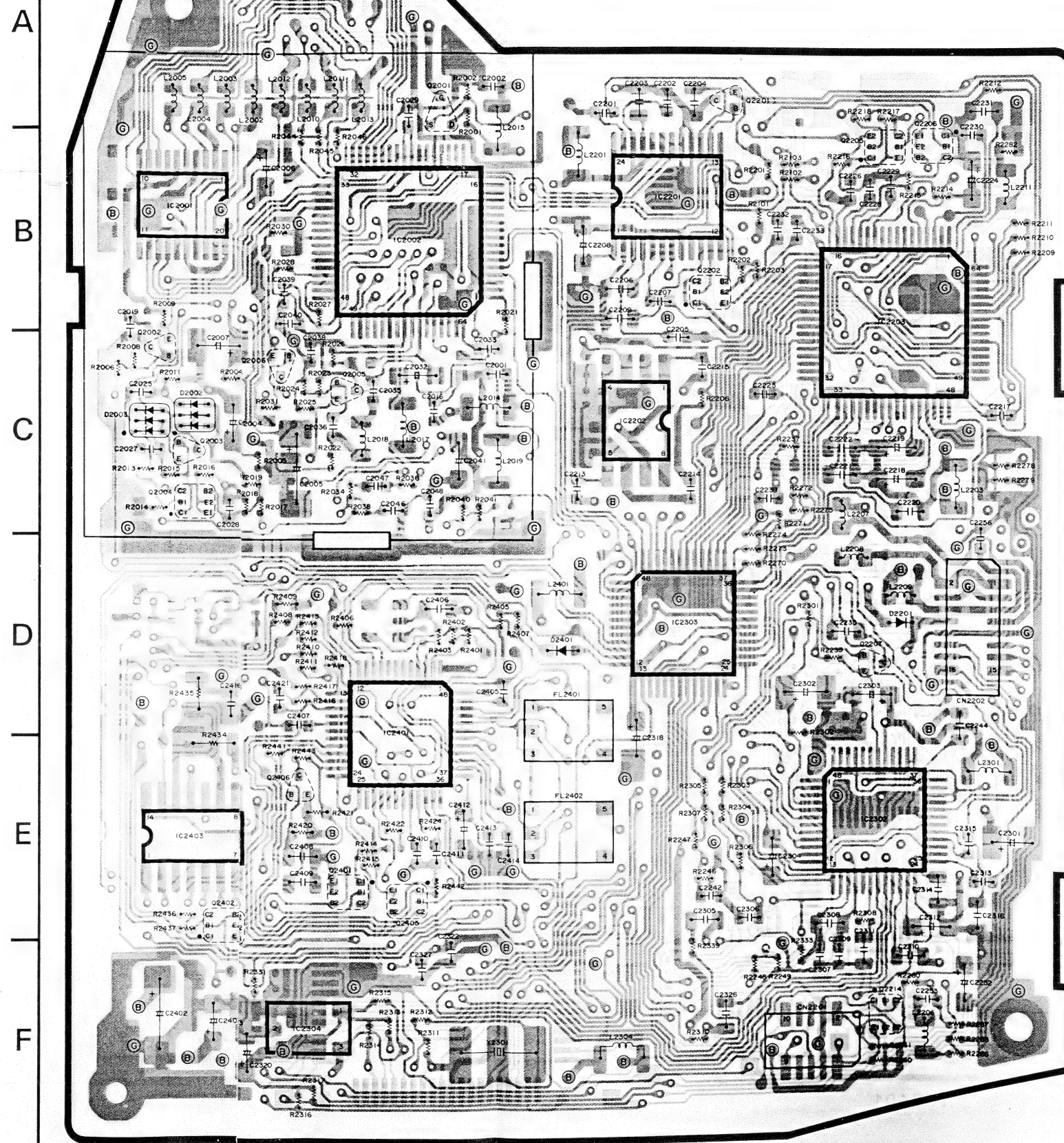
Blue (----) : Ground layer

BOARD DIAGRAM CAMERA-MAIN P.C.B.

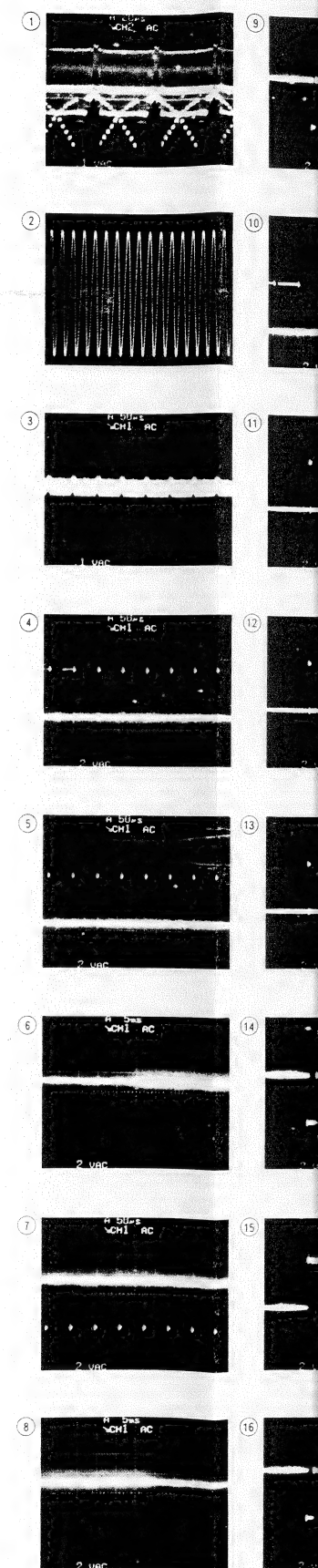
RA MAIN P.C.B. (SOLDERING SIDE)

A-MAIN P.C.B. consists of four layers.
 (Component, Power Supply and Ground patterns.)
 Hole marks on each P.C.B. denote:
 Soldering side ↔ Component side
 Soldering side (Component side) ↔ Ground
 Soldering side (Component side) ↔ Power Supply
 The lines denote signal patterns which connected in the
 or Power Supply layer.
 Line (——) : Power Supply layer
 Line (----) : Ground layer

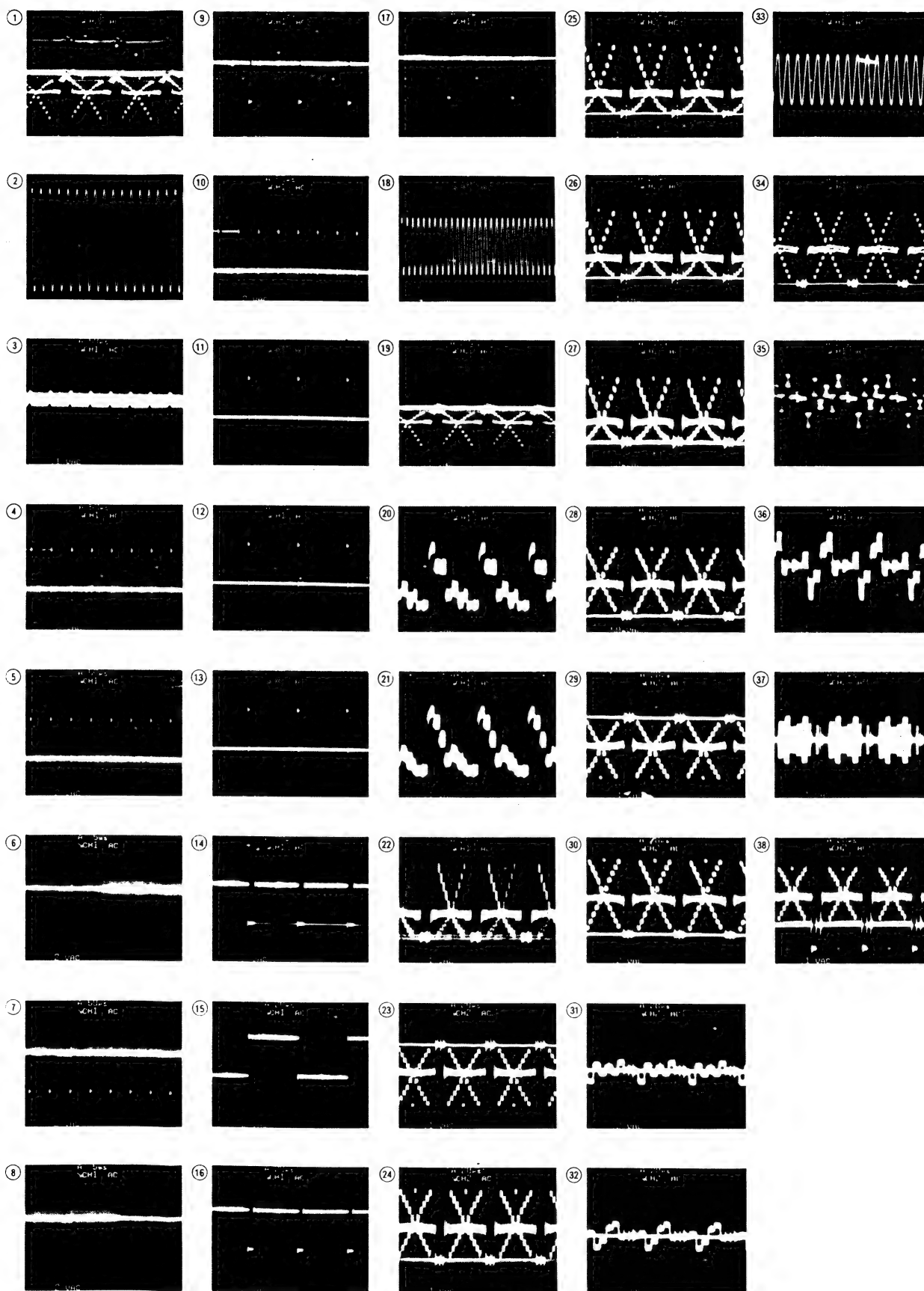
D 2002	C-1
D 2003	C-1
D 2201	D-5
D 2401	D-3
IC 2001	B-1
IC 2002	B-2
IC 2201	B-4
IC 2203	B-5
IC 2202	C-3
IC 2302	E-5
IC 2303	D-4
IC 2304	F-2
IC 2401	D-2
IC 2403	E-1
Q 2001	A-2
Q 2002	C-1
Q 2003	C-1
Q 2004	C-1
Q 2005	C-2
Q 2006	C-2
Q 2201	A-4
Q 2202	B-4
Q 2205	B-5
Q 2206	B-5
Q 2207	D-5
Q 2214	F-5
Q 2401	E-2
Q 2402	E-1
Q 2405	E-2
Q 2406	E-2



SIGNAL WAVE (SENSOR PROCESS)

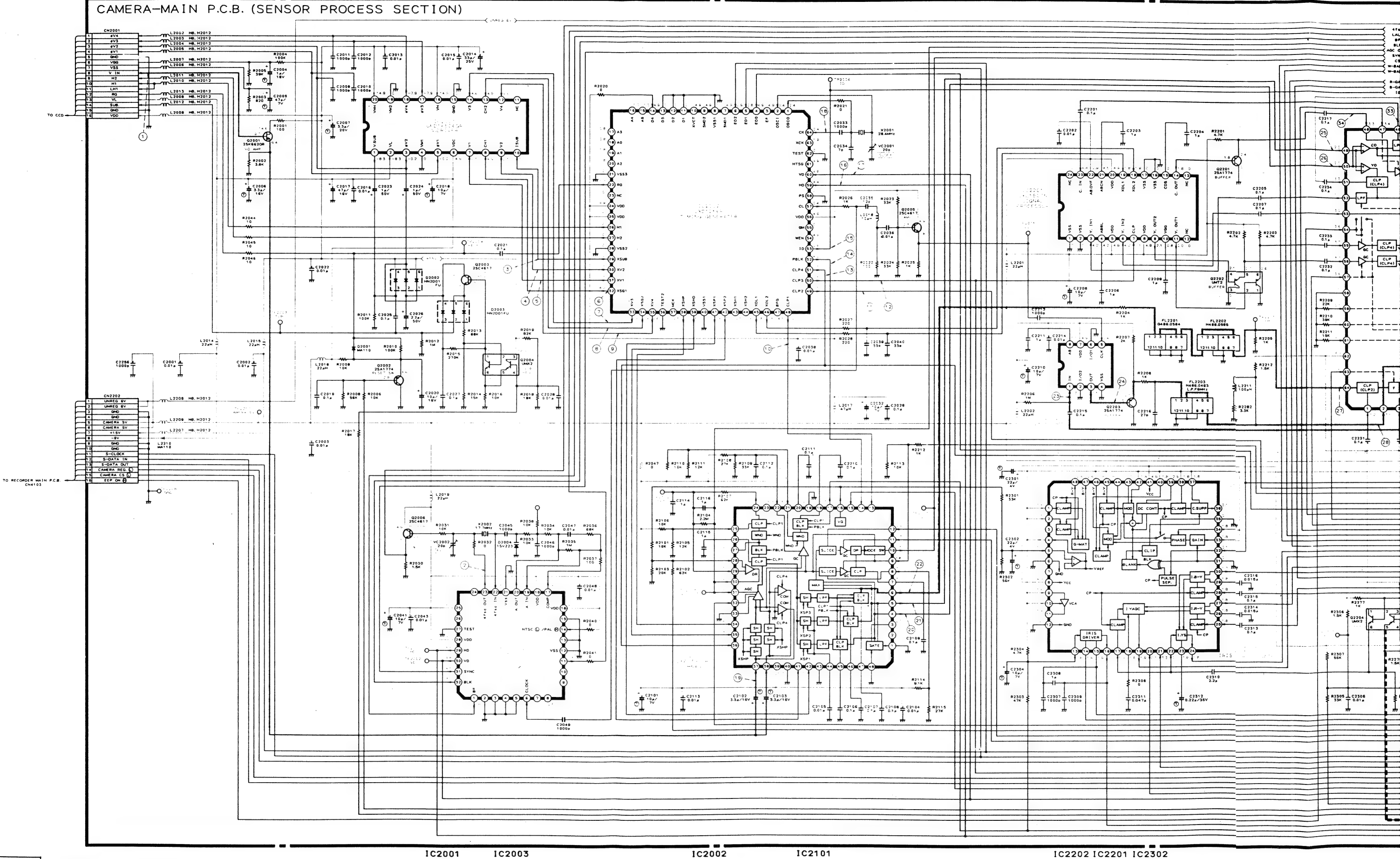


SIGNAL WAVEFORMS (SENSOR PROCESS SECTION)



SCHEMATIC DIAGRAM CAMERA-MAIN P.C.B. (SENSOR PROCESS SECTION)

• SIGNAL PATH YTC SIGNAL (GRAY) Y SIGNAL (BLUE)



ION)

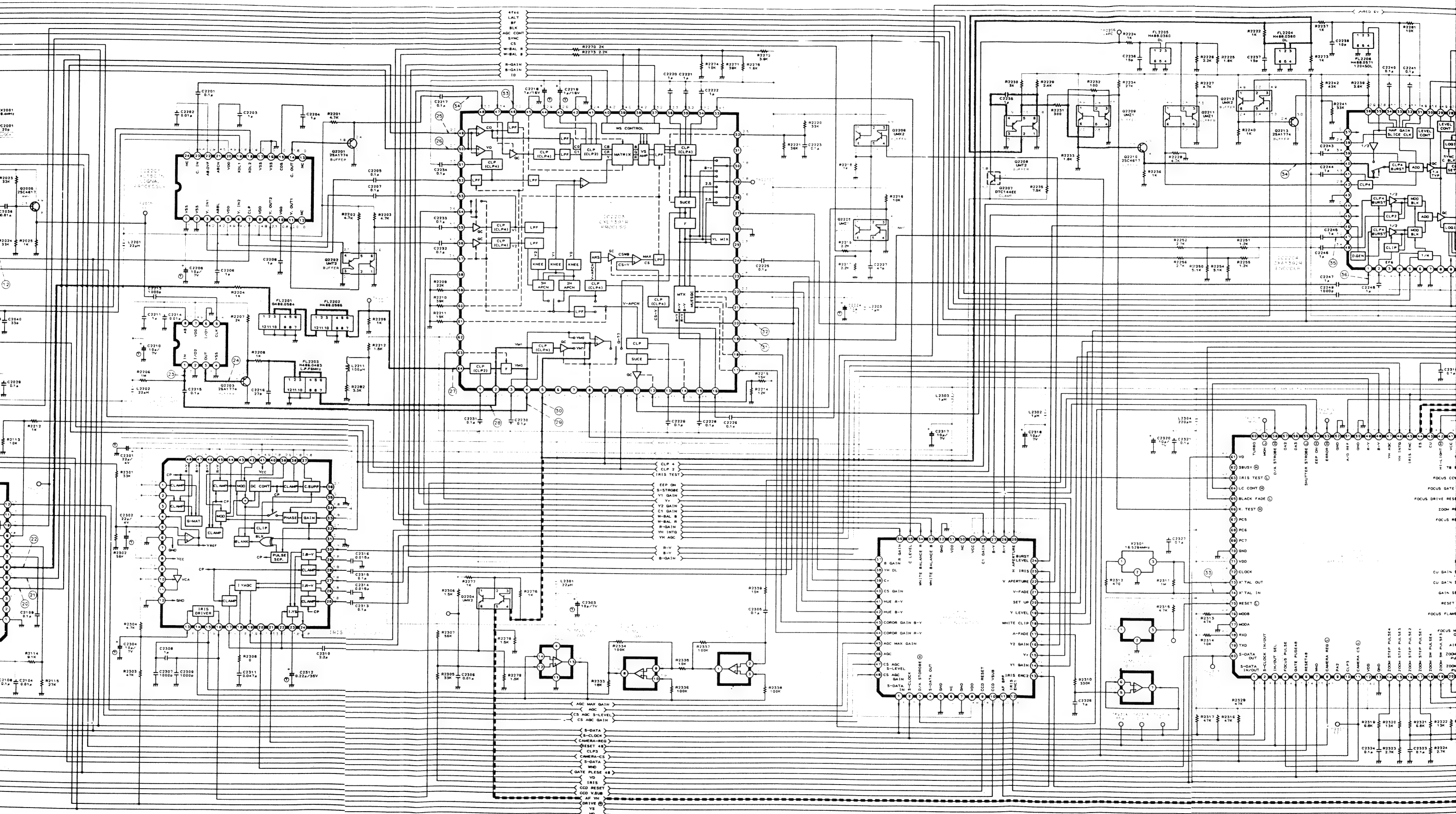
•SIGNAL PATH

YTC SIGNAL (GRAY)

Y SIGNAL (BLUE)

C SIGNAL (ORANGE)

ES+CU SIGNAL (BLUE)



IC2202 IC2201 IC2302

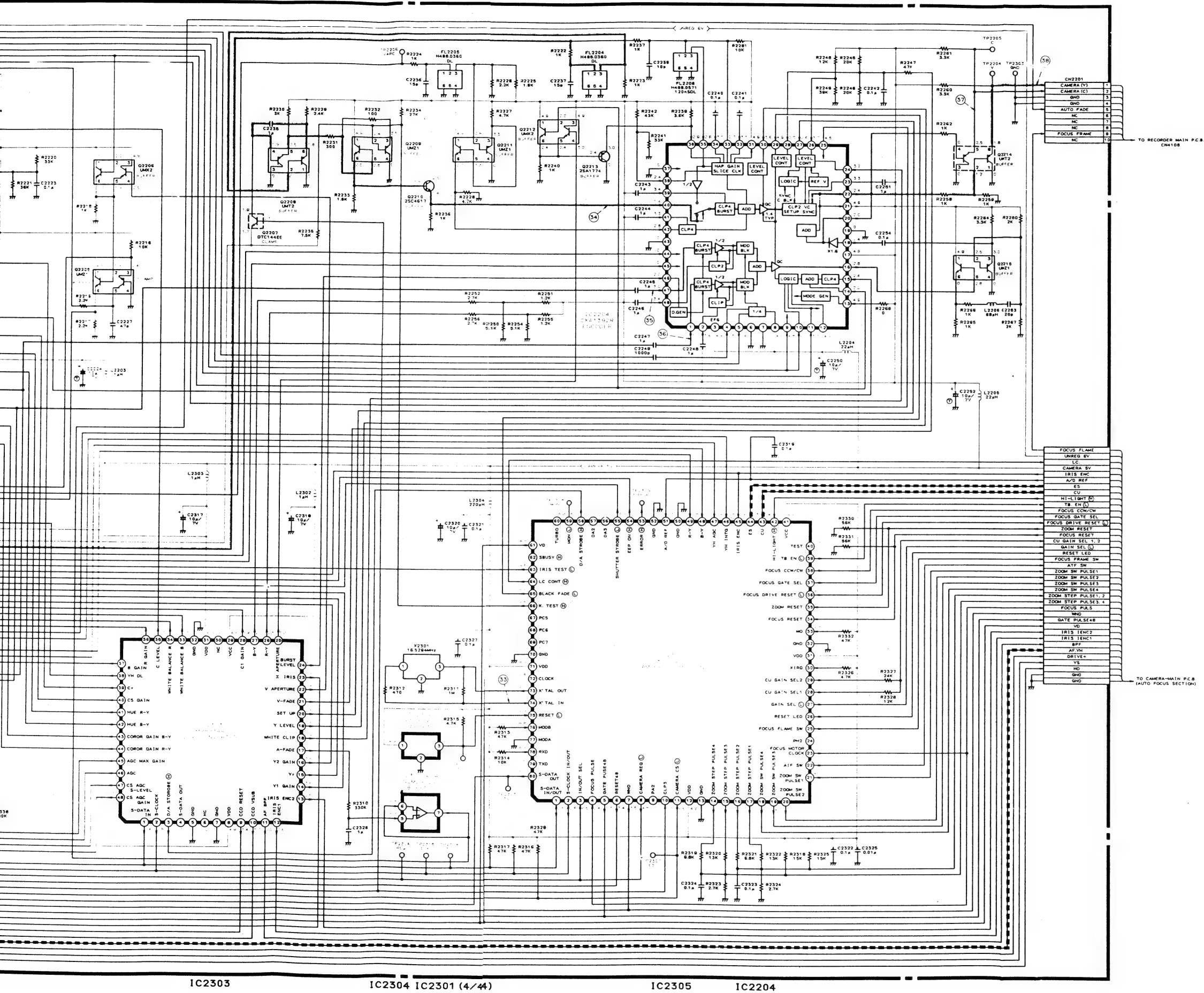
IC2301 (1/4) IC2203 IC2301 (2/4) IC2301 (3/4)

IC2303

IC2304 IC2301 (4/4)

IC2305

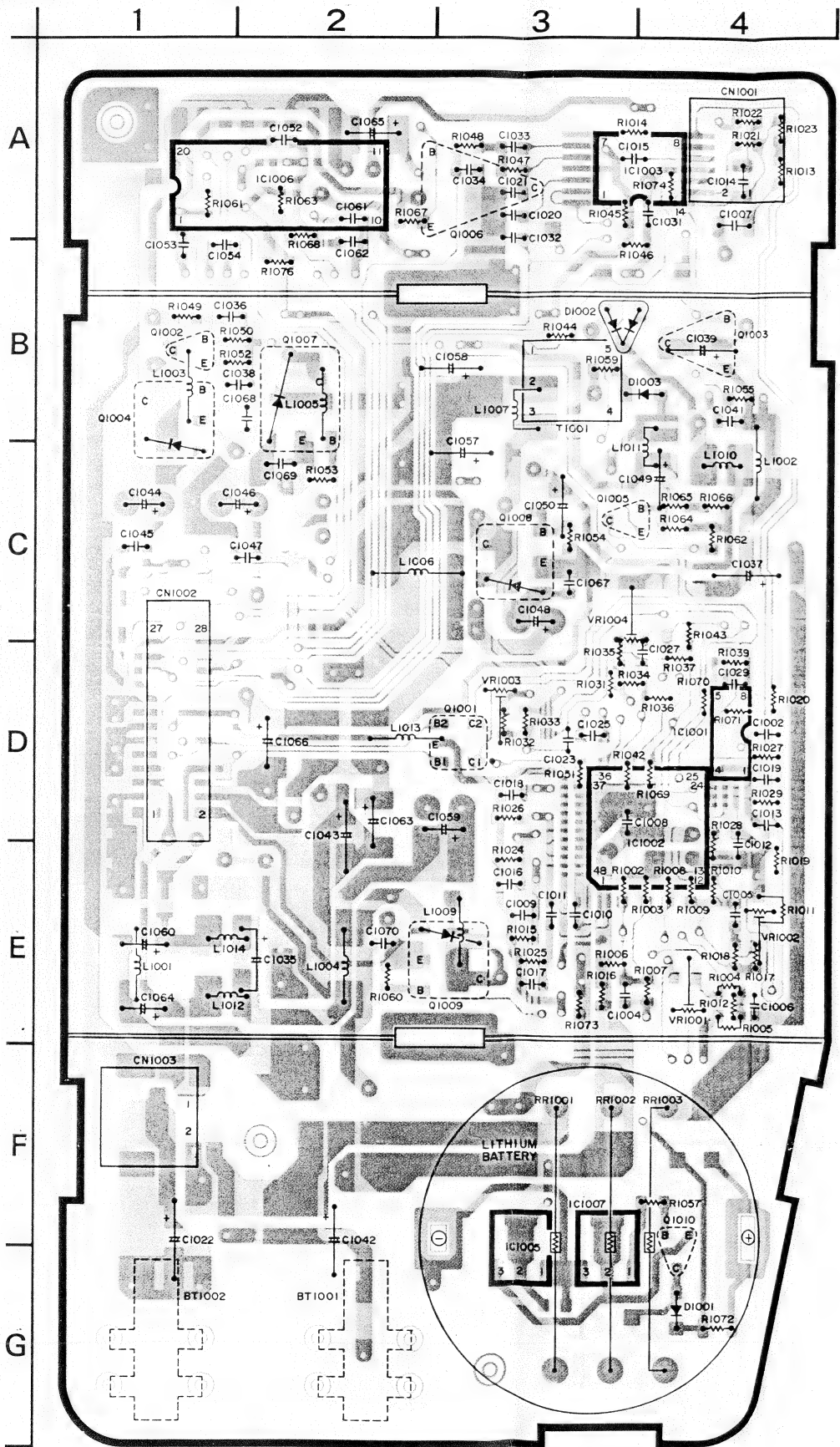
IC2204



CIRCUIT BOARD DIAGRAM POWER SUPPLY P.C.B. & RECORDER-MAIN P.C.B.

POWER SUPPLY P.C.B.

D1001	G-4
D1002	B-3
D1003	B-4
IC1001	D-4
IC1002	E-4
IC1003	A-4
IC1005	G-3
IC1006	A-2
IC1007	F-3
Q1001	D-3
Q1002	B-1
Q1003	B-4
Q1004	B-1
Q1005	C-3
Q1006	A-3
Q1007	B-2
Q1008	C-3
Q1009	E-3
Q1010	F-4
VR1001	E-4
VR1002	E-4
VR1003	D-3
VR1004	C-3

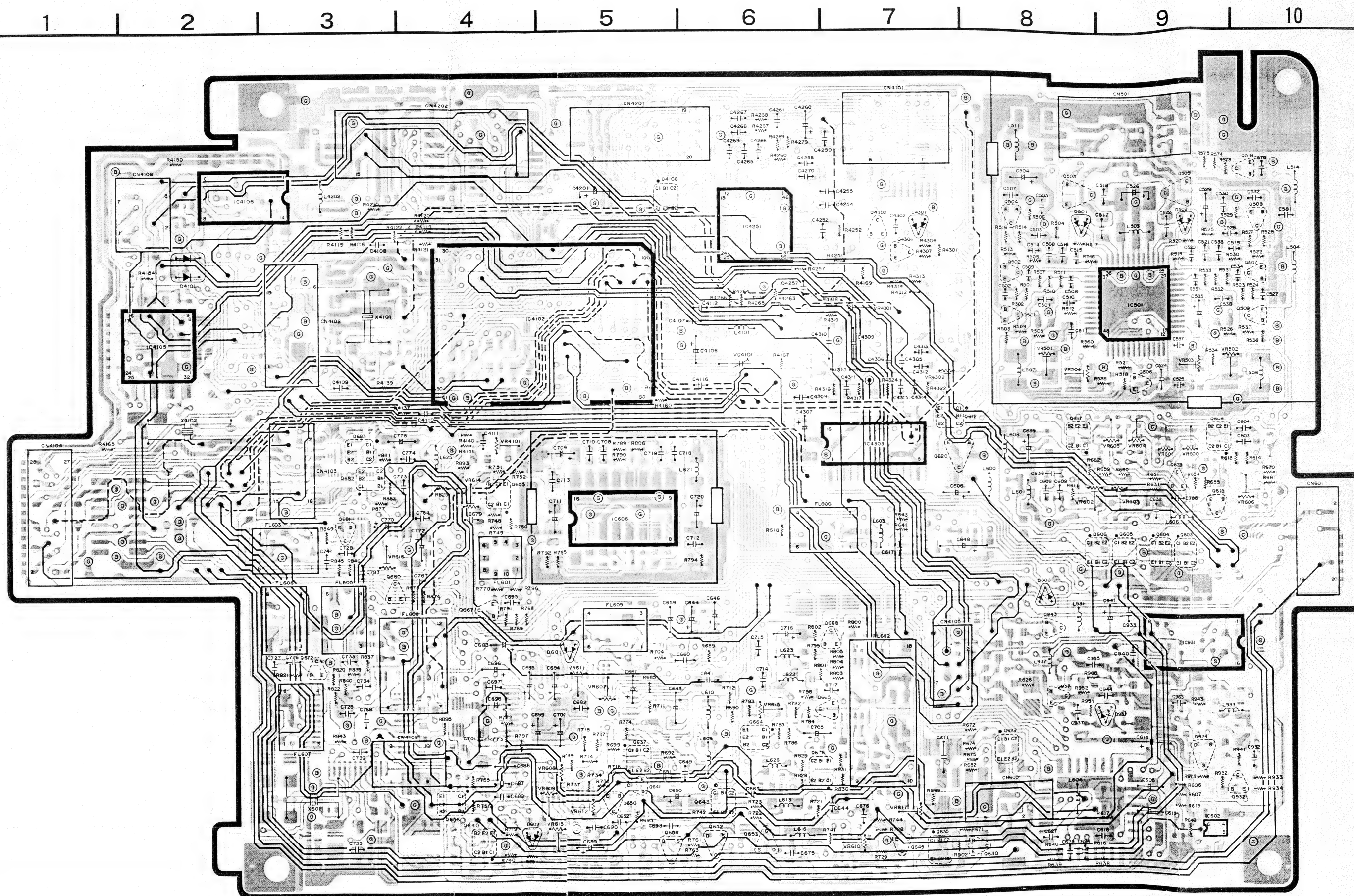


RECORDER MAIN P.C.B.
(COMPONENT SIDE)

< NOTICE >
RECORDER-MAIN P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)
※ Through-hole marks on each P.C.B. denote :
○ : Soldering side ↔ Component side
Ⓒ : Soldering side (Component side) ↔ Ground
Ⓑ : Soldering side (Component side) ↔ Power Supply
And, blue lines denote signal patterns which connected in the
Ground or Power Supply layer.
Blue (——) : Power Supply layer
Blue (----) : Ground layer

D501	B-8	Q672	E-3
D502	B-9	Q676	F-6
D600	D-8	Q680	D-3
D601	E-5	Q681	D-3
D602	F-4	Q682	D-3
D931	E-9	Q683	D-3
D4101	B-2	Q924	F-9
D4301	B-7	Q932	F-10
IC501	7-9	Q937	E-8
IC602	F-9	Q4106	B-5
IC606	D-5	Q4301	B-7
IC931	E-9	Q4302	B-7
IC4102	B-4	VC4101	C-6
IC4105	C-2	VR501	C-8
IC4106	B-2	VR502	C-9
IC4251	B-6	VR503	C-9
IC4303	C-7	VR504	C-8
Q501	B-8	VR600	C-9
Q502	B-8	VR601	C-9
Q503	B-8	VR602	D-8
Q504	B-8	VR603	D-9
Q505	B-9	VR604	C-9
Q506	C-9	VR605	C-9
Q507	B-10	VR606	D-10
Q508	B-10	VR607	E-5
Q509	C-10	VR608	F-4
Q518	A-10	VR609	F-4
Q603	D-9	VR610	F-7
Q604	D-9	VR611	E-5
Q605	D-9	VR612	F-5
Q606	D-8	VR613	F-5
Q612	C-7	VR614	D-4
Q615	D-9	VR615	E-6
Q617	C-8	VR616	D-3
Q620	C-7	VR617	F-7
Q623	D-9	VR4101	C-4
Q629	E-8	VR4301	B-7
Q630	F-8	VR4302	C-7
Q635	F-7		
Q637	F-5		
Q640	F-4		
Q641	F-5		
Q643	F-6		
Q645	F-7		
Q650	F-5		
Q652	F-6		
Q653	F-6		
Q655	D-4		
Q656	F-4		
Q658	F-5		
Q664	E-6		
Q665	E-7		
Q667	D-4		
Q668	E-7		

A
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B
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C
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D
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E
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F



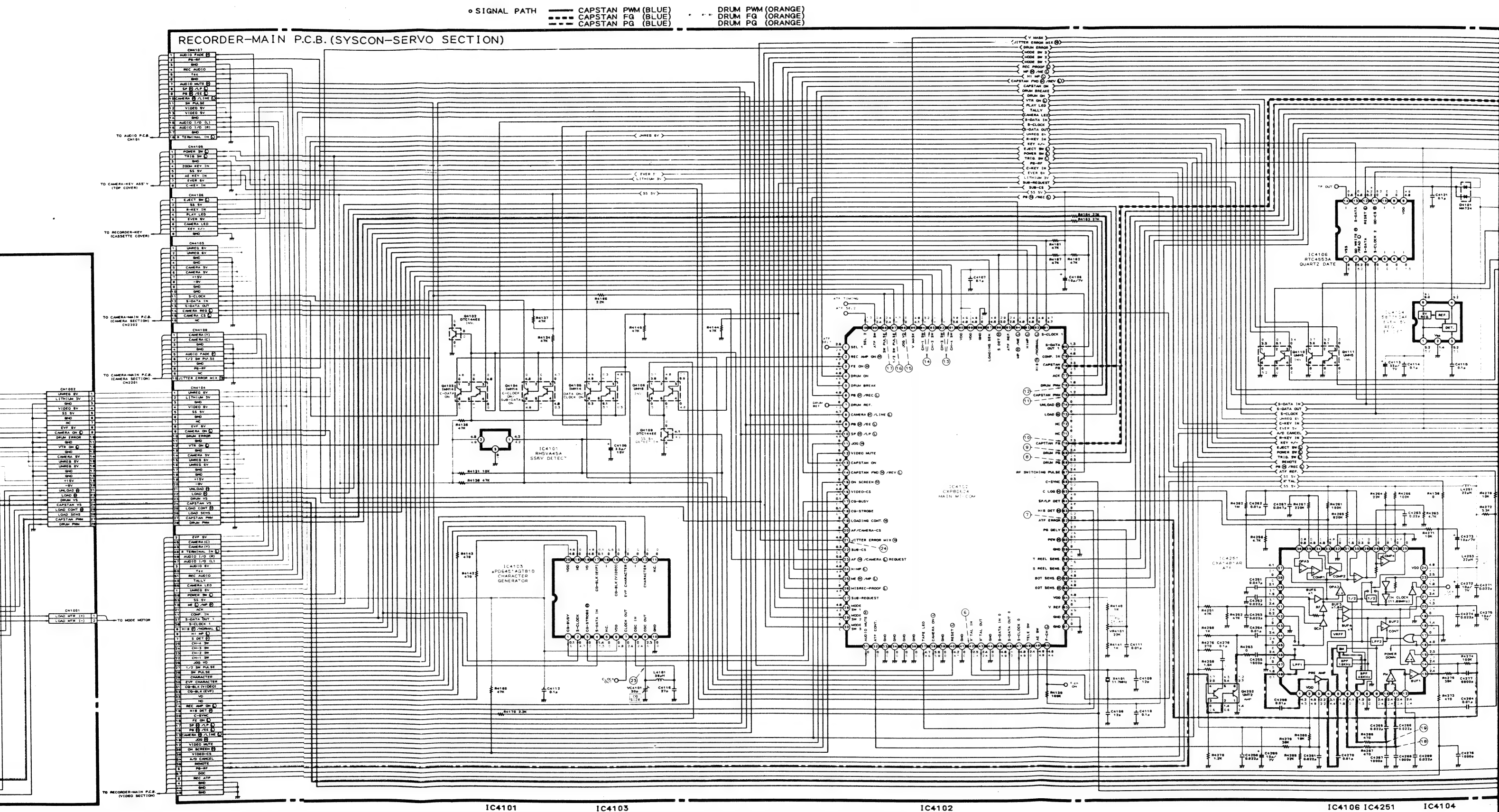
10



• SIGNAL PATH



P.C.B. (SYSCON-SERVO SECTION)



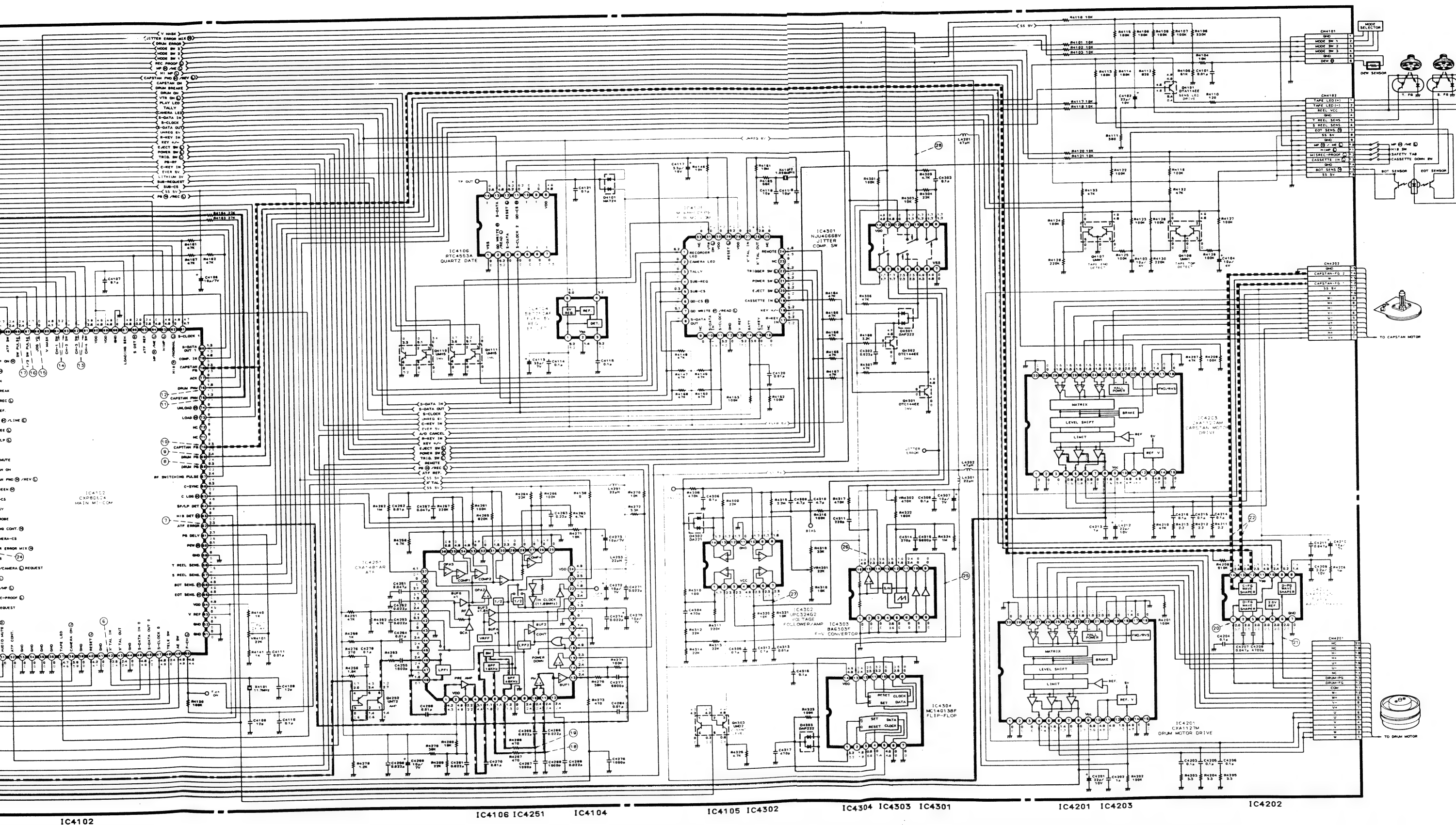
IC4101

IC4103

IC4102

IC4106 IC4251

IC4104

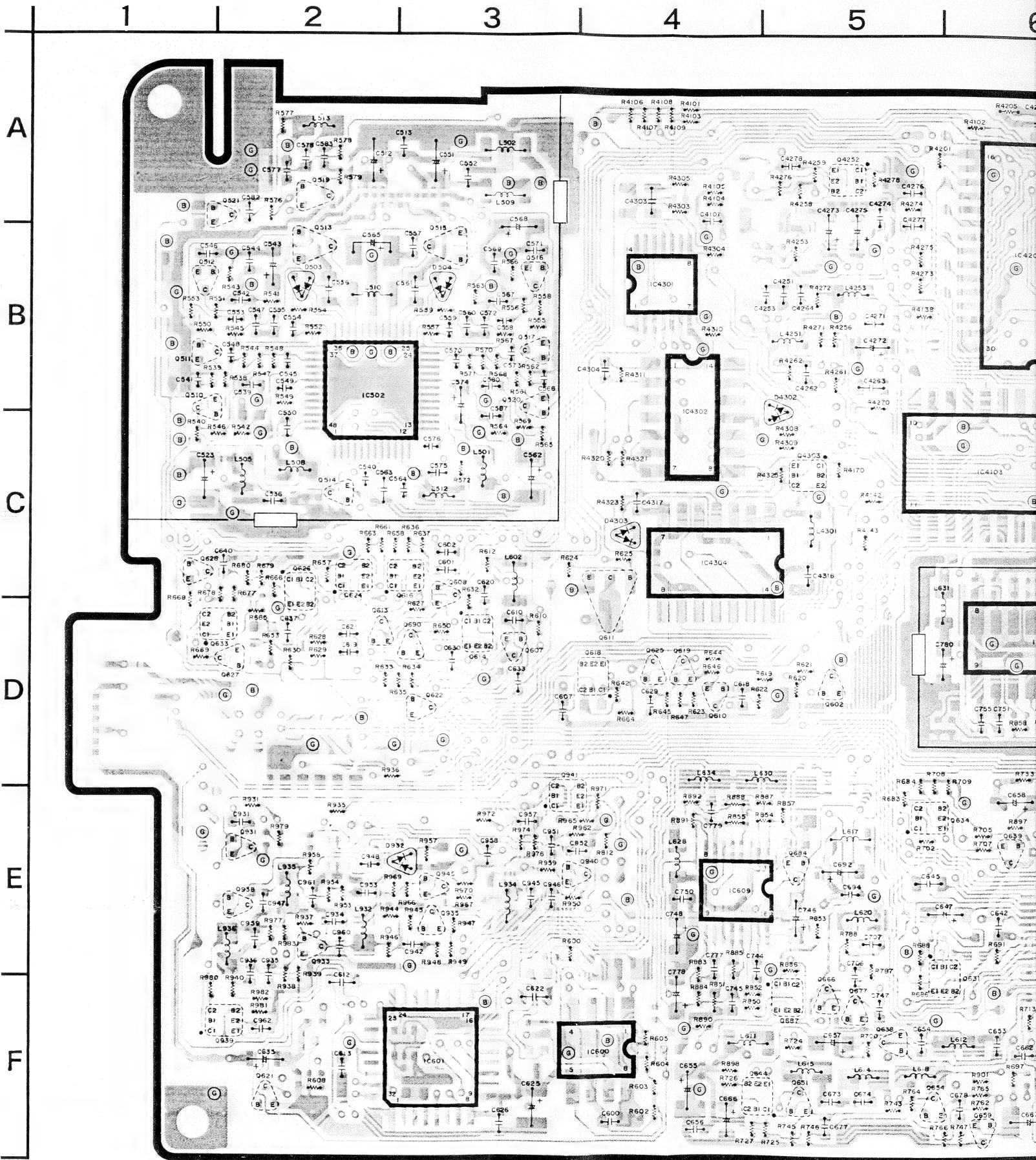


CIRCUIT BOARD DIAGRAM RECORDER-MAIN P.C.B. & JACK P.C.B.

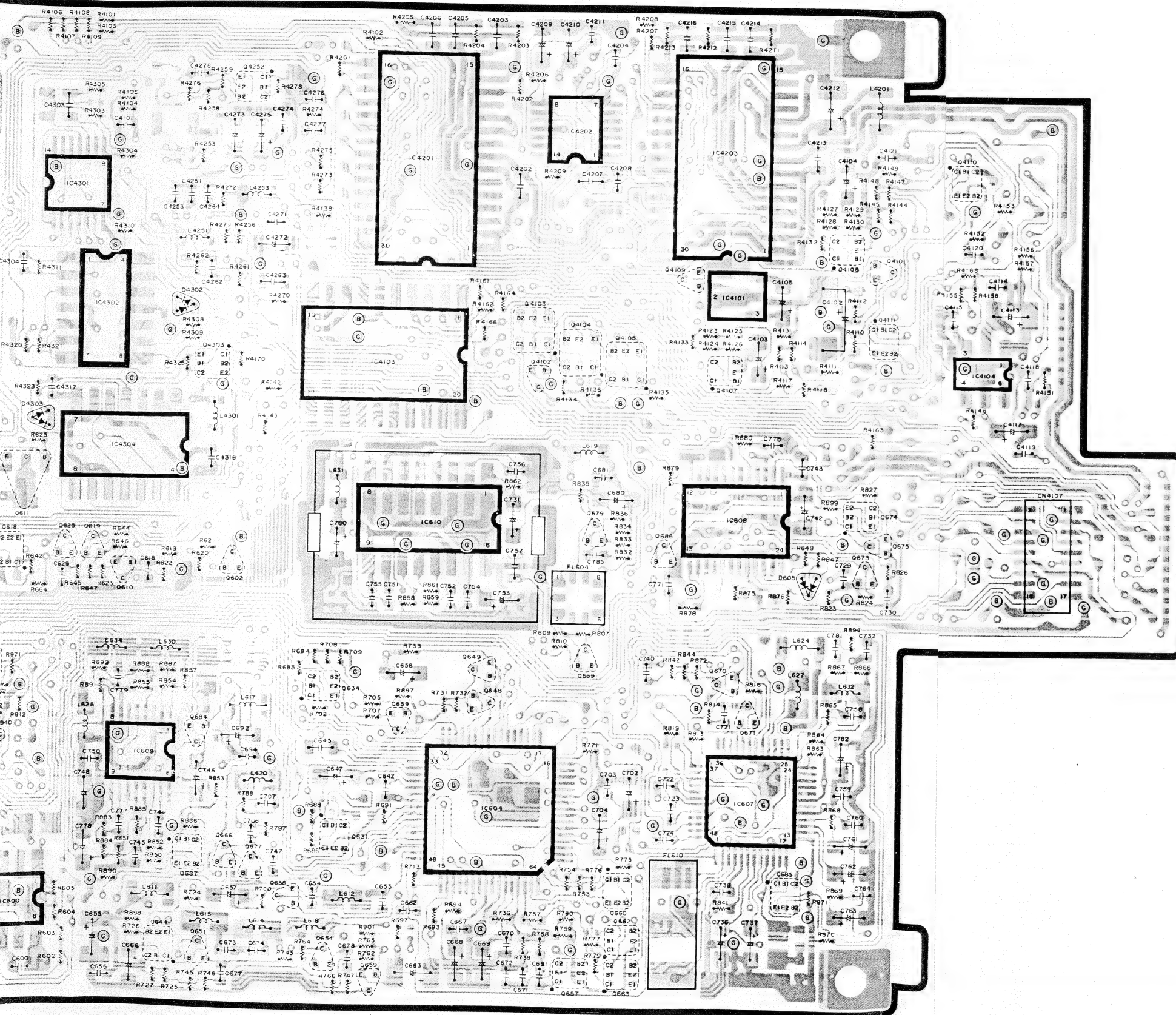
RECORDER MAIN P.C.B.
(SOLDERING SIDE)

< NOTICE >
RECORDER-MAIN P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)
※ Through-hole marks on each P.C.B. denote :
○ : Soldering side ↔ Component side
⊙ : Soldering side (Component side) ↔ Ground
⊕ : Soldering side (Component side) ↔ Power Supply
And, blue lines denote signal patterns which connected in the
Ground or Power Supply layer.
Blue (——) : Power Supply layer
Blue (----) : Ground layer

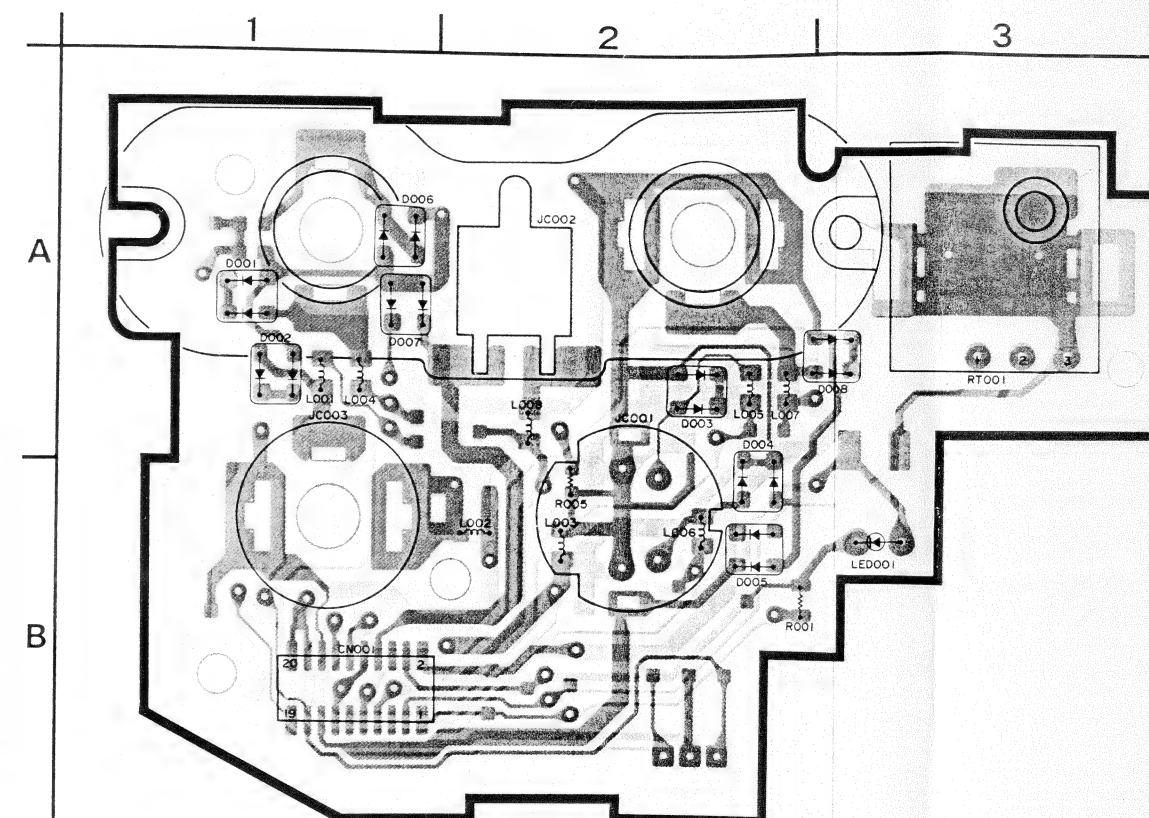
D503	B-2	Q639	E-6
D504	B-3	Q644	F-4
D605	D-8	Q648	E-6
D932	E-3	Q649	E-6
D4302	C-5	Q651	F-5
D4303	C-4	Q657	F-7
IC502	B-2	Q659	F-6
IC600	F-4	Q660	F-7
IC601	F-3	Q662	F-7
IC604	E-6	Q663	F-7
IC607	E-8	Q666	F-5
IC609	E-4	Q669	E-7
IC610	D-6	Q670	E-8
IC4101	B-8	Q671	E-8
IC4103	C-6	Q673	D-9
IC4104	C-9	Q674	D-9
IC4201	B-6	Q675	D-9
IC4202	A-7	Q677	E-5
IC4203	B-8	Q679	D-7
IC4301	B-4	Q684	E-5
IC4302	C-4	Q685	F-8
IC4304	C-4	Q686	D-7
Q510	B-1	Q687	F-5
Q511	B-1	Q690	D-3
Q512	B-1	Q931	E-2
Q513	B-2	Q933	E-2
Q514	C-2	Q935	E-3
Q515	B-3	Q938	E-2
Q516	B-3	Q939	F-2
Q517	B-3	Q940	E-4
Q519	A-2	Q941	D-3
Q520	B-3	Q945	E-3
Q521	A-2	Q4101	B-9
Q602	D-5	Q4102	C-7
Q607	D-3	Q4103	C-7
Q608	C-3	Q4104	C-7
Q610	D-4	Q4105	C-7
Q611	D-4	Q4107	C-8
Q613	D-2	Q4108	B-8
Q614	D-3	Q4109	B-8
Q616	C-3	Q4110	B-9
Q618	D-3	Q4111	C-9
Q619	D-4	Q4252	A-5
Q621	F-2	Q4303	C-5
Q622	D-3		
Q624	C-2		
Q625	D-4		
Q626	C-2		
Q627	D-2		
Q628	C-1		
Q631	E-6		
Q633	D-2		
Q634	E-5		
Q638	F-5		



JACK P.C.B.

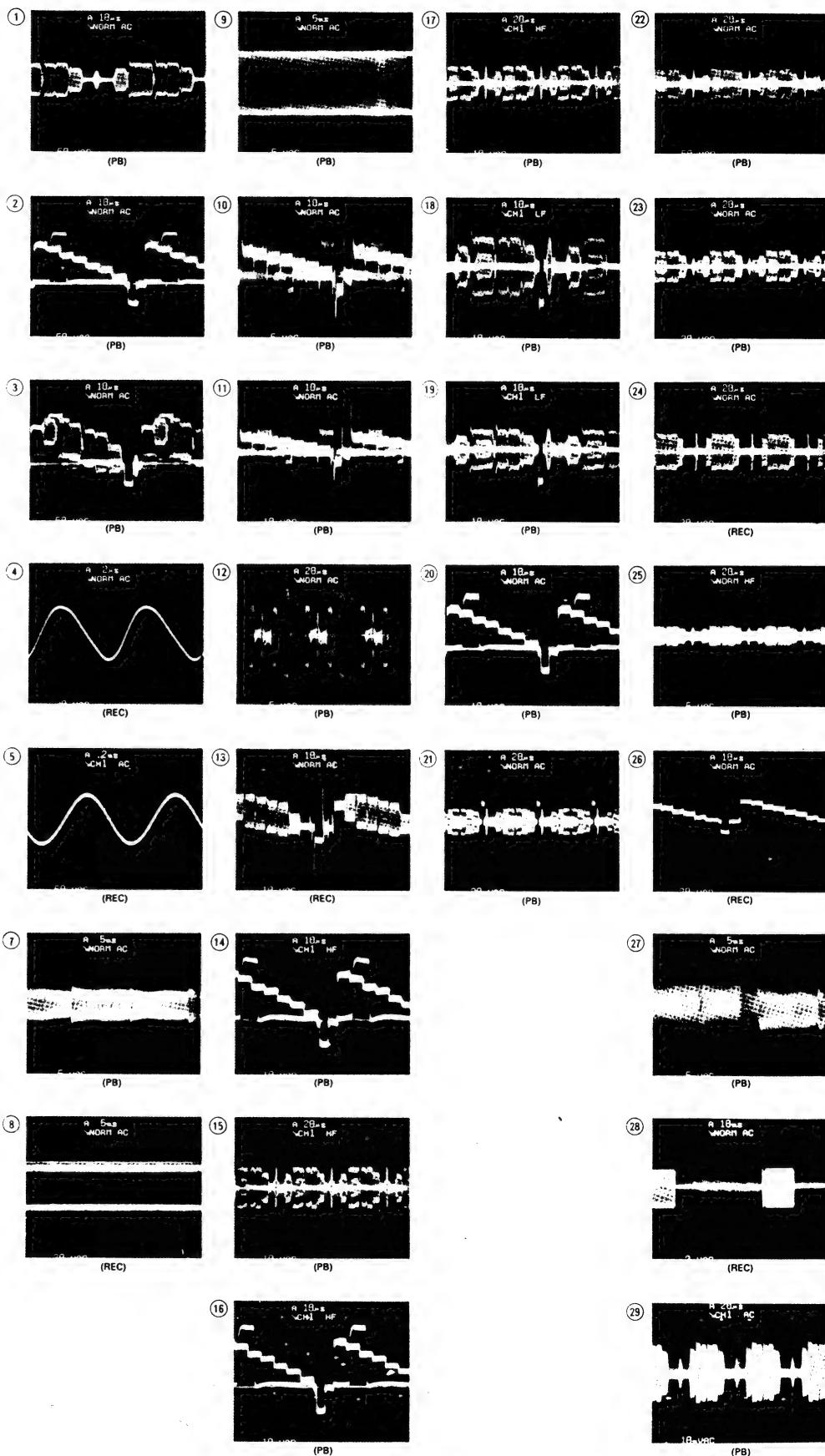
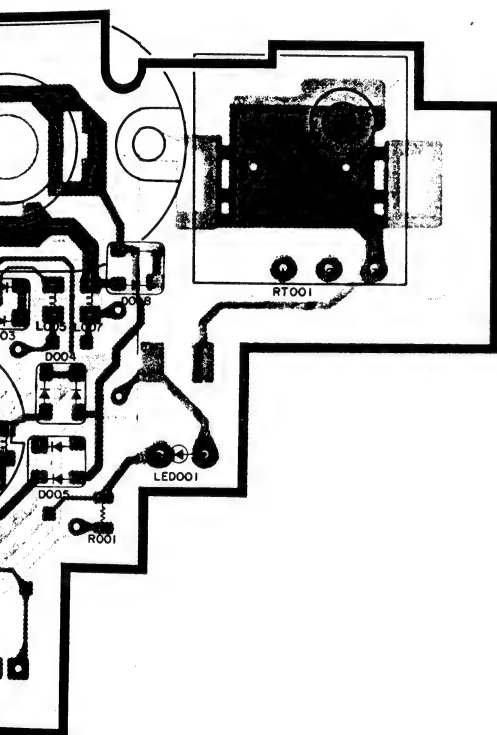


D 0 0 1	A - 1
D 0 0 2	A - 1
D 0 0 3	A - 2
D 0 0 4	B - 2
D 0 0 5	B - 2
D 0 0 6	A - 1
D 0 0 7	A - 1
D 0 0 8	A - 3

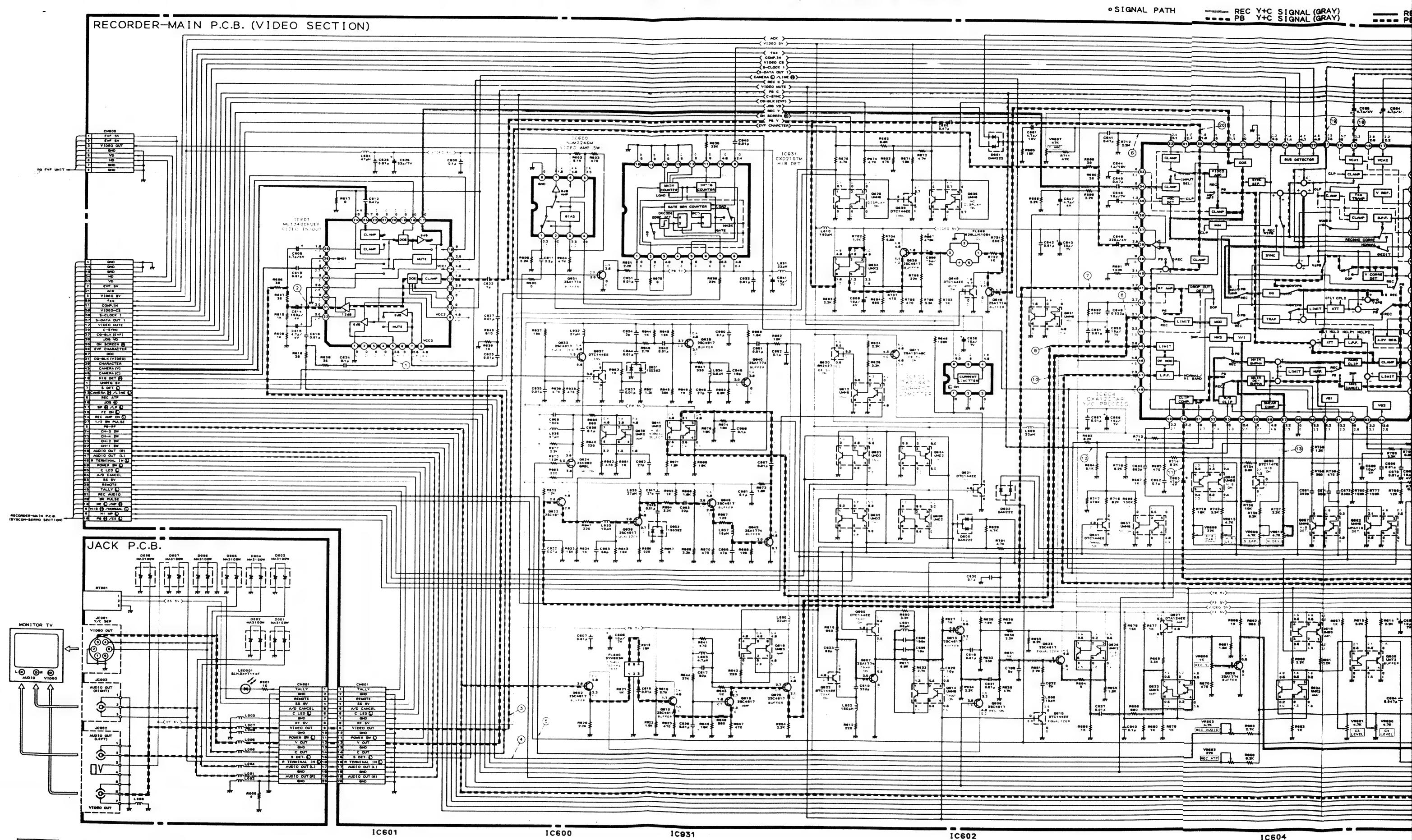


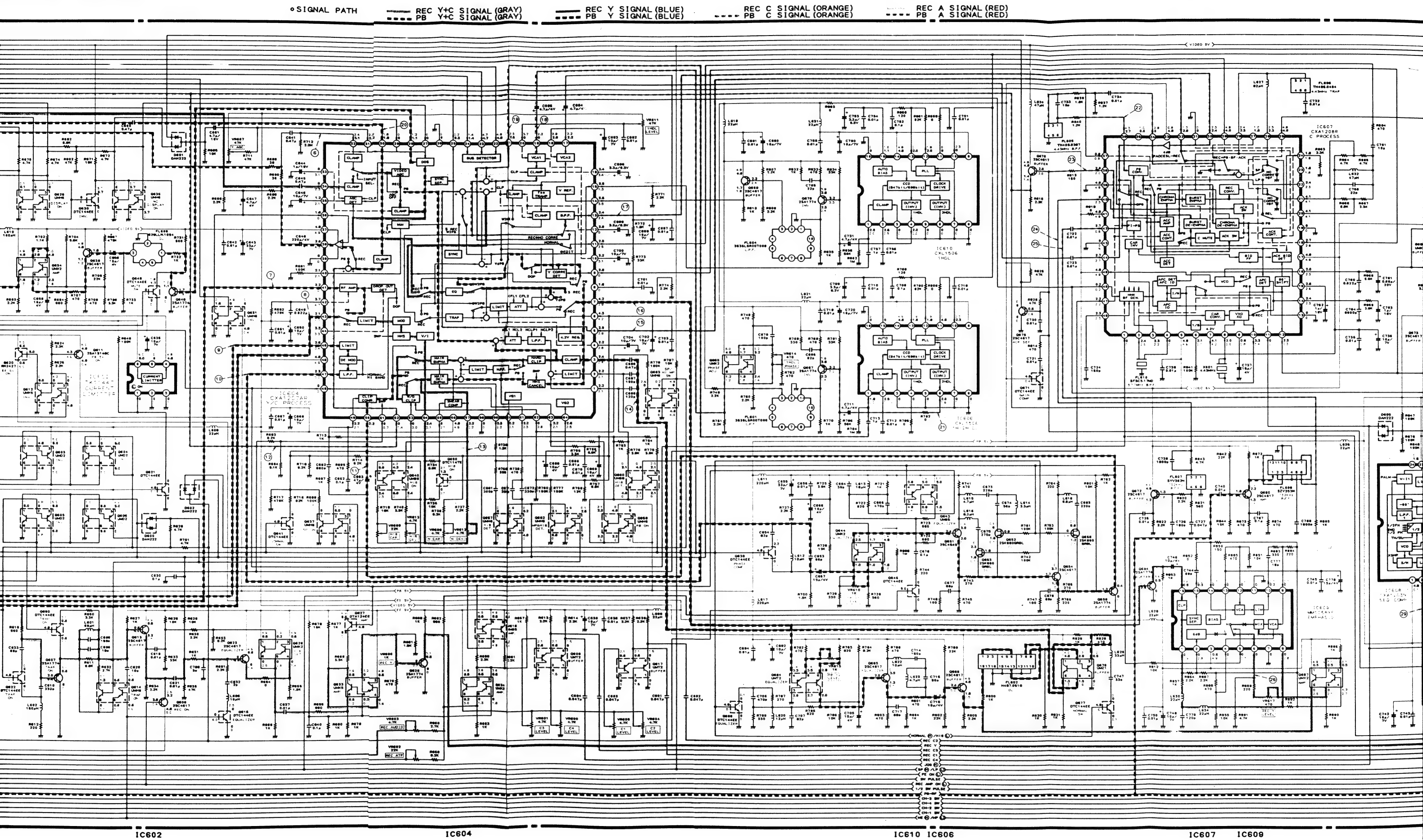
SIGNAL WAVEFORMS (VIDEO SECTION)

3

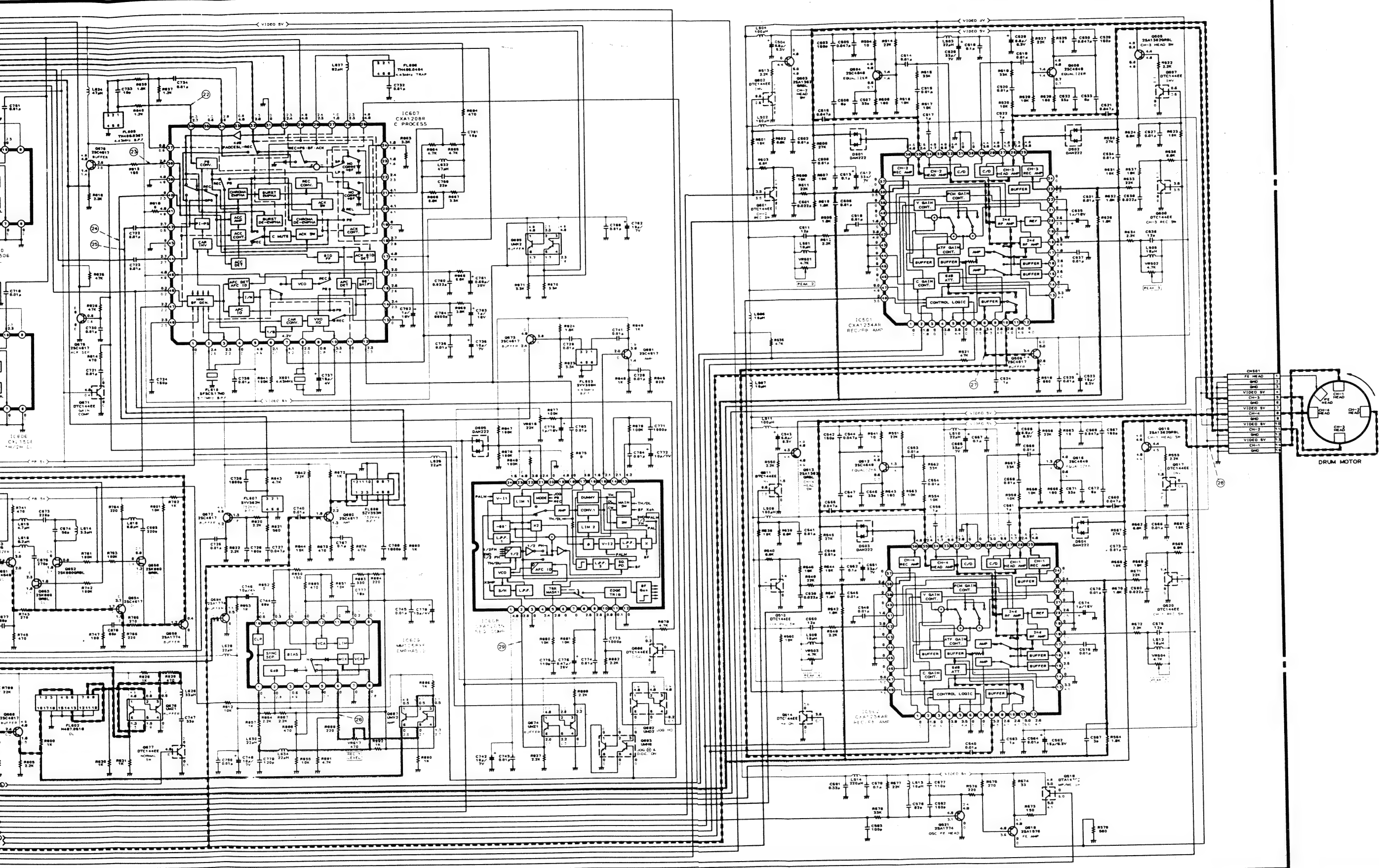


SCHEMATIC DIAGRAM RECORDER-MAIN P.C.B. (VIDEO SECTION), JACK P.C.B.





SIGNAL (RED)
SIGNAL (RED)



06

IC607 IC608

IC608

IC501 IC502

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IV-11

CIRCUIT BOARD DIAGRAM AUDIO P.C.B.

AUDIO P.C.B.
(COMPONENT SIDE)

IC103	D-2
IC104	B-2
IC106	C-2
IC109	A-2
Q101	D-2
Q102	B-2
Q202	C-2
Q203	A-1
Q204	C-2
VR101	C-1
VR102	B-1
VR103	C-2
VR104	B-2

< NOTICE >

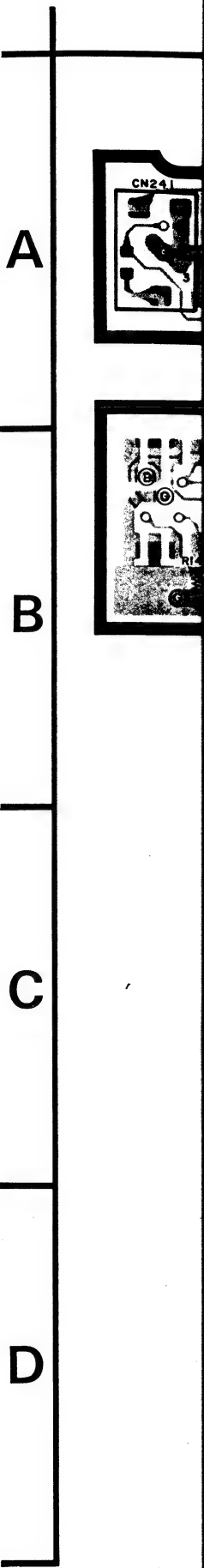
AUDIO P.C.B. consists of four layers.
(Soldering, Component, Power Supply and Ground patterns.)

※ Through-hole marks on each P.C.B. denote :

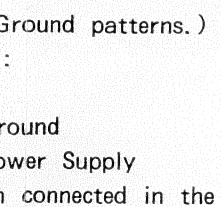
- : Soldering side ↔ Component side
- ⊙ : Soldering side (Component side) ↔ Ground
- ⊕ : Soldering side (Component side) ↔ Power Supply

And, blue lines denote signal patterns which connected in the Ground or Power Supply layer.

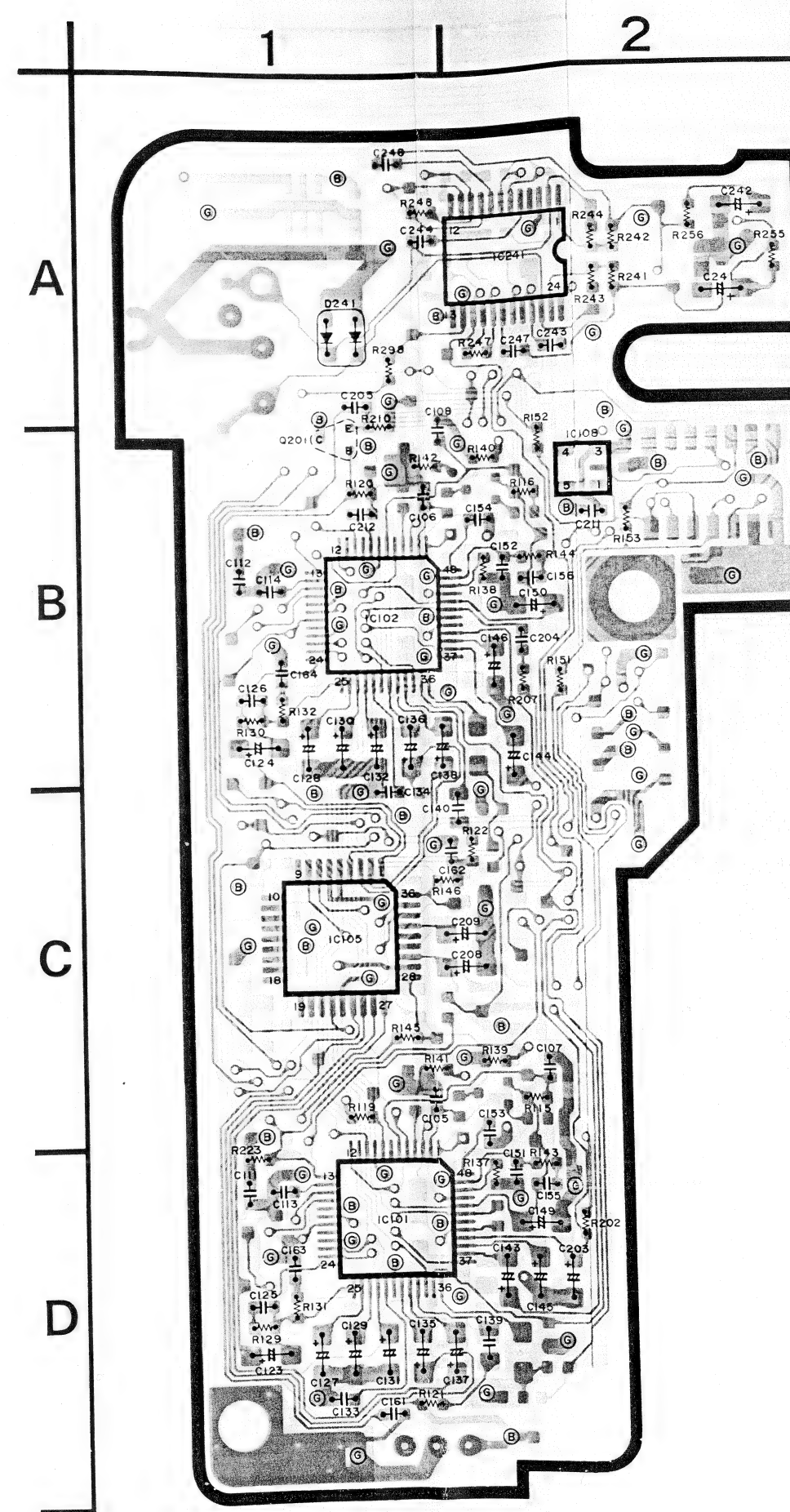
- Blue (——) : Power Supply layer
- Blue (----) : Ground layer



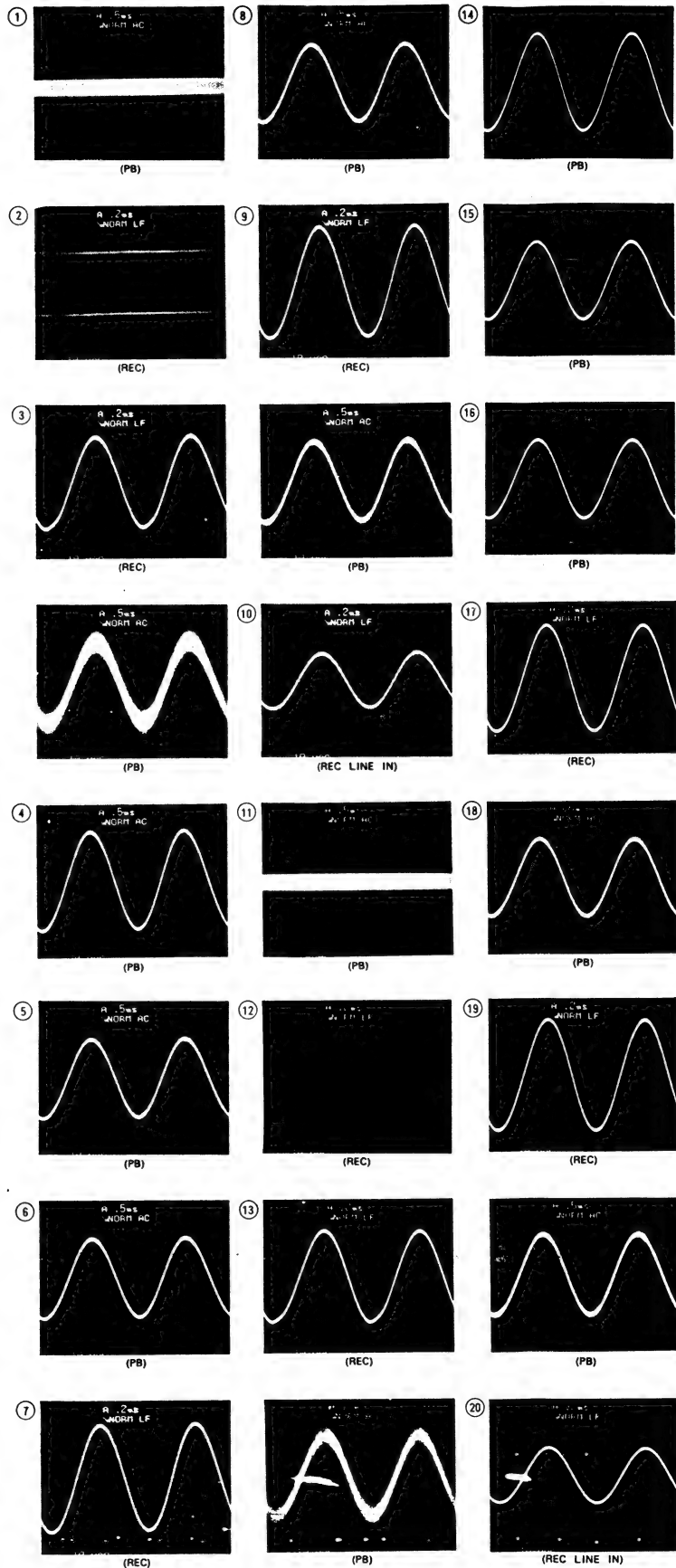
Ground patterns.)
:
ground
Power Supply
connected in the



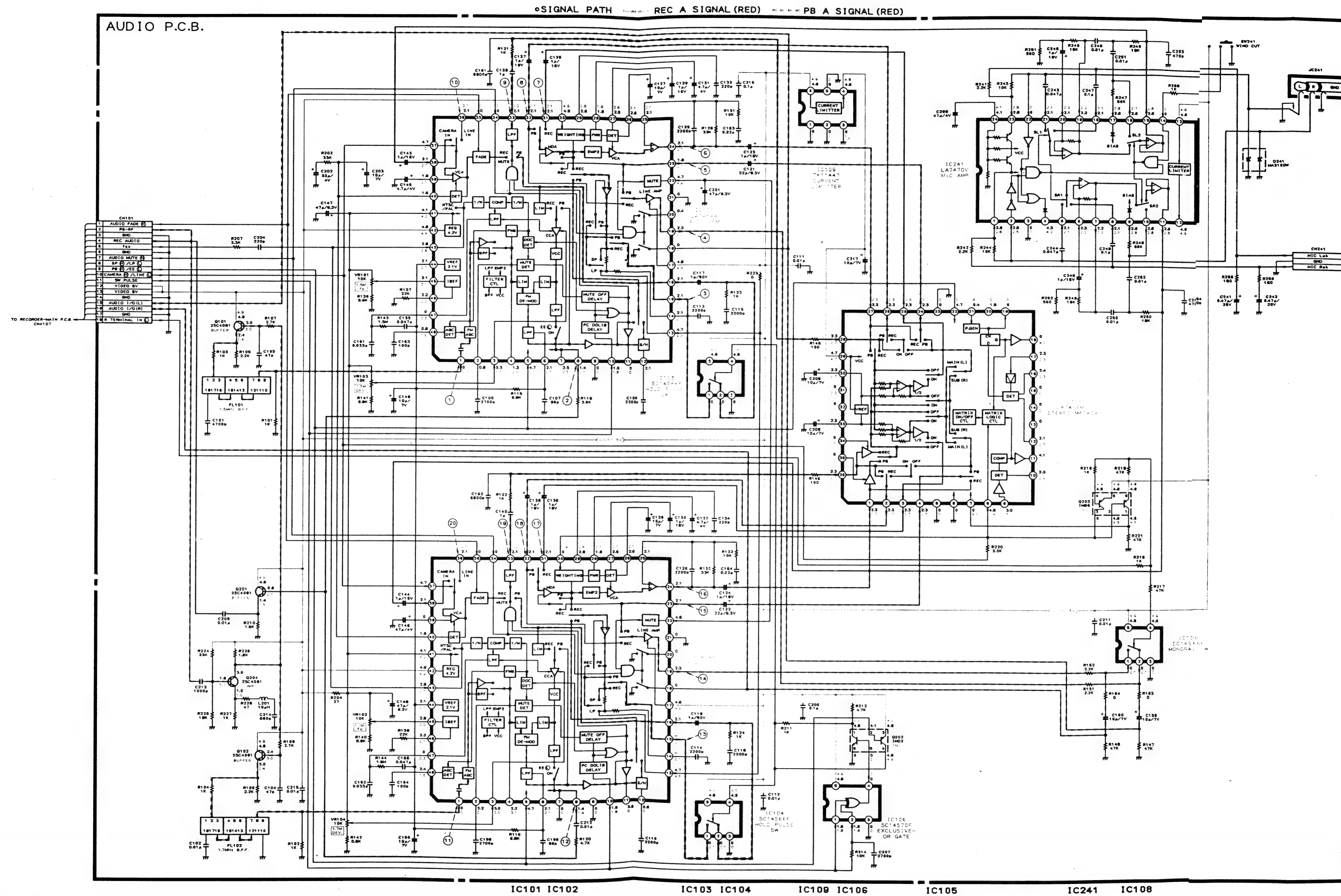
D 2 4 1	A - 1
I C 1 0 1	D - 1
I C 1 0 2	B - 1
I C 1 0 5	C - 1
I C 1 0 8	B - 2
I C 2 4 1	A - 2
Q 2 0 1	B - 1



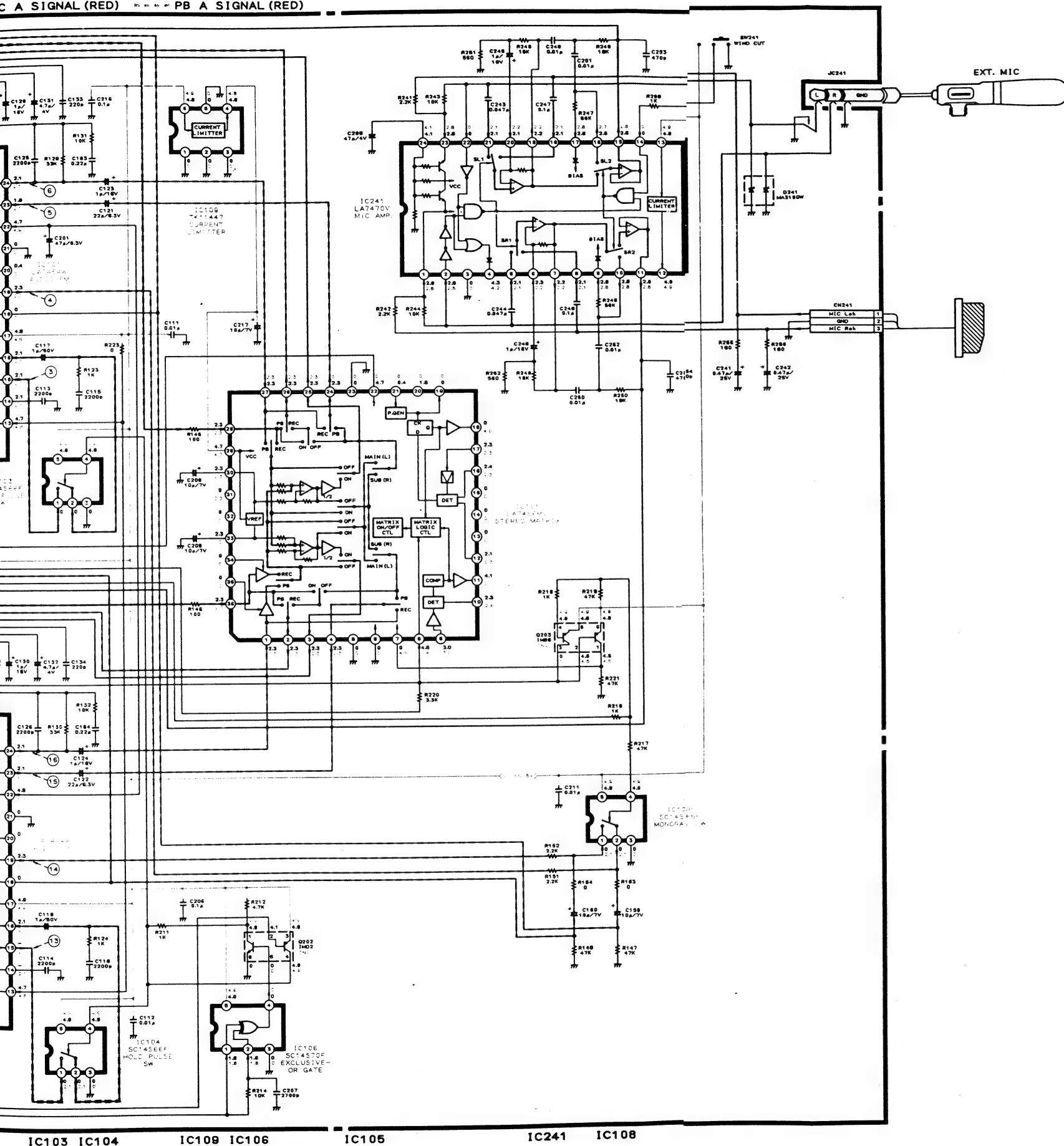
SIGNAL WAVEFORMS



01 Nov. 1992



C A SIGNAL (RED) PB A SIGNAL (RED)

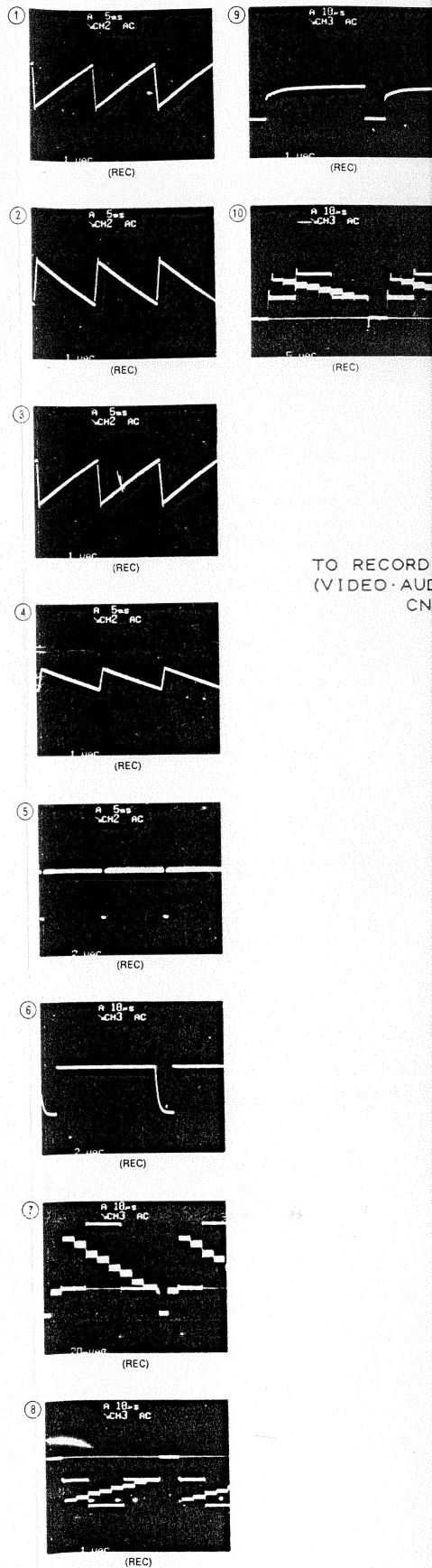
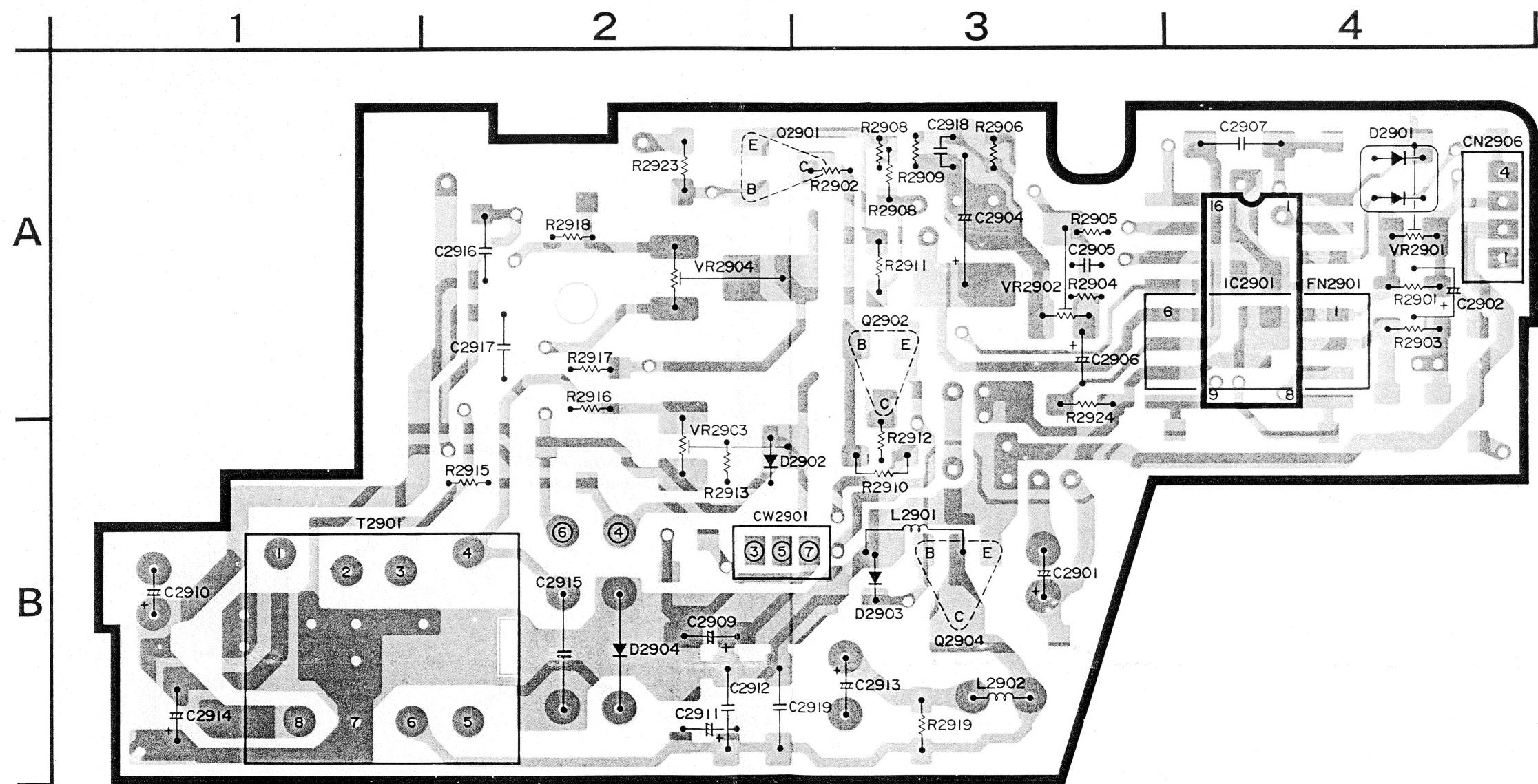


CIRCUIT BOARD DIAGRAM EVF P.C.B.

SCHEMATIC DIAGRAM

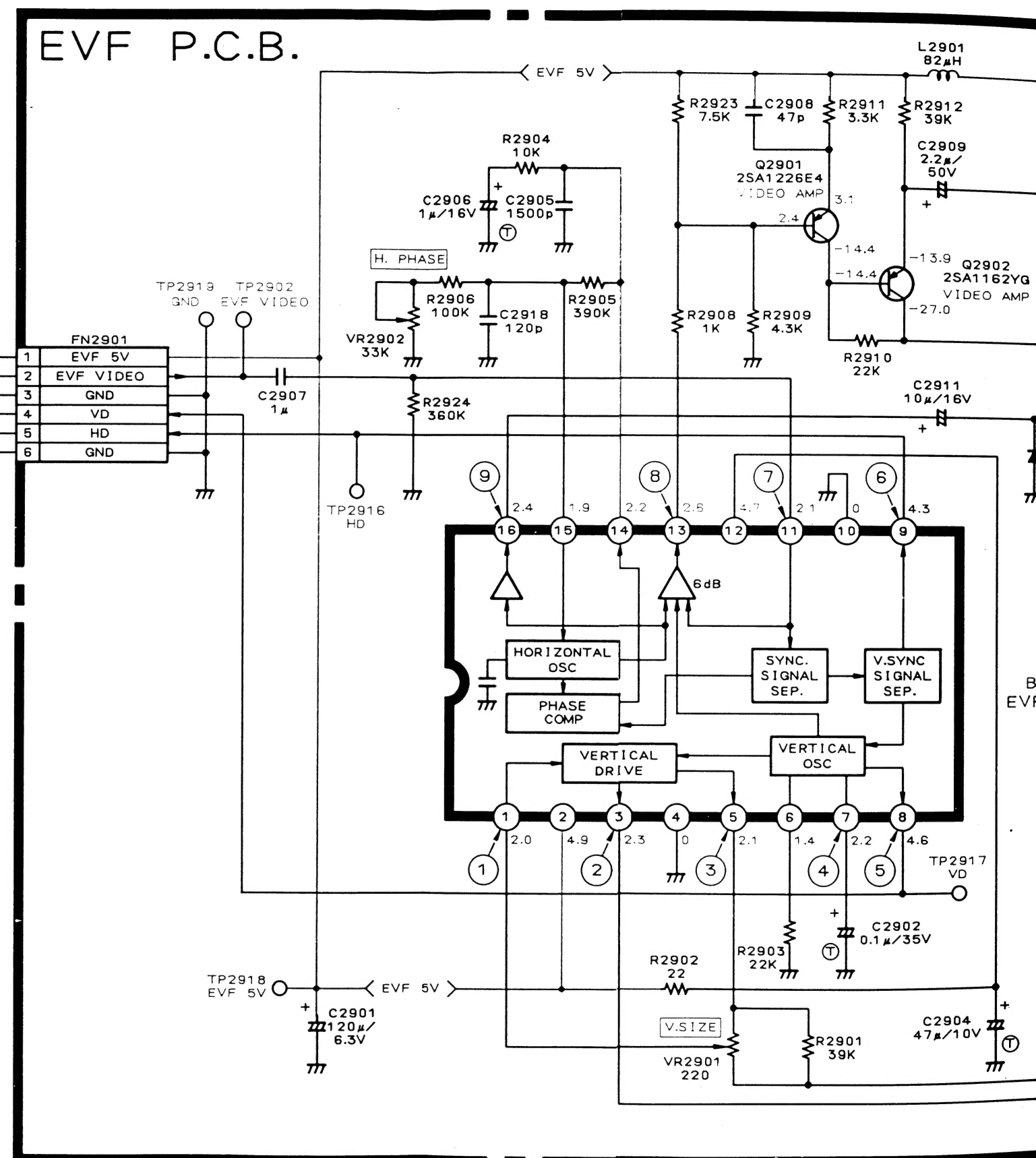
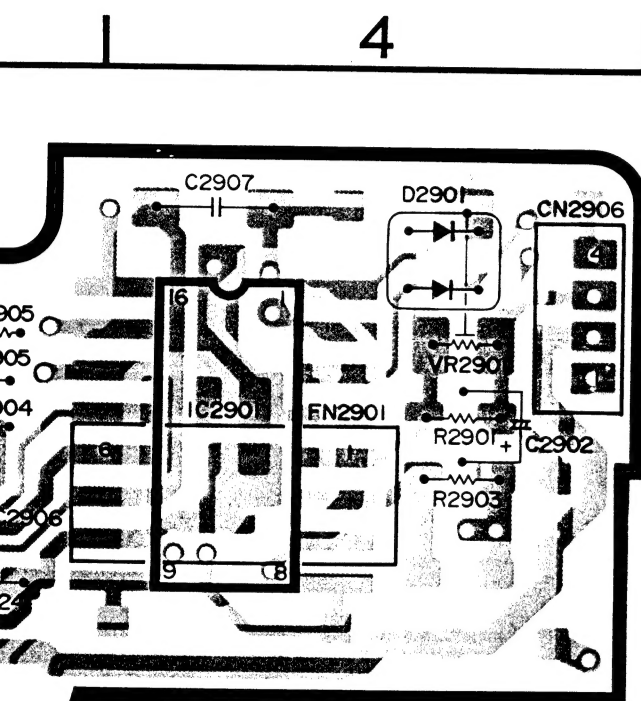
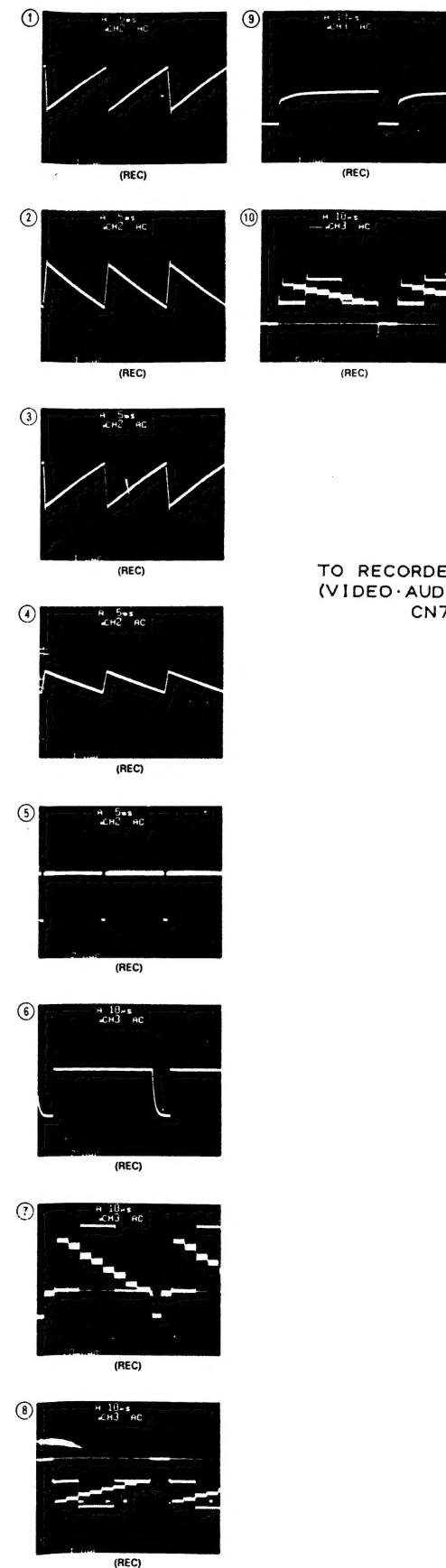
SIGNAL WAVEFORM

D 2 9 0 1	A - 4
D 2 9 0 2	B - 2
D 2 9 0 3	B - 3
D 2 9 0 4	B - 2
I C 2 9 0 1	A - 4
Q 2 9 0 1	A - 3
Q 2 9 0 2	A - 3
Q 2 9 0 4	B - 3
V R 2 9 0 1	A - 4
V R 2 9 0 2	A - 3
V R 2 9 0 3	B - 2
V R 2 9 0 4	A - 2



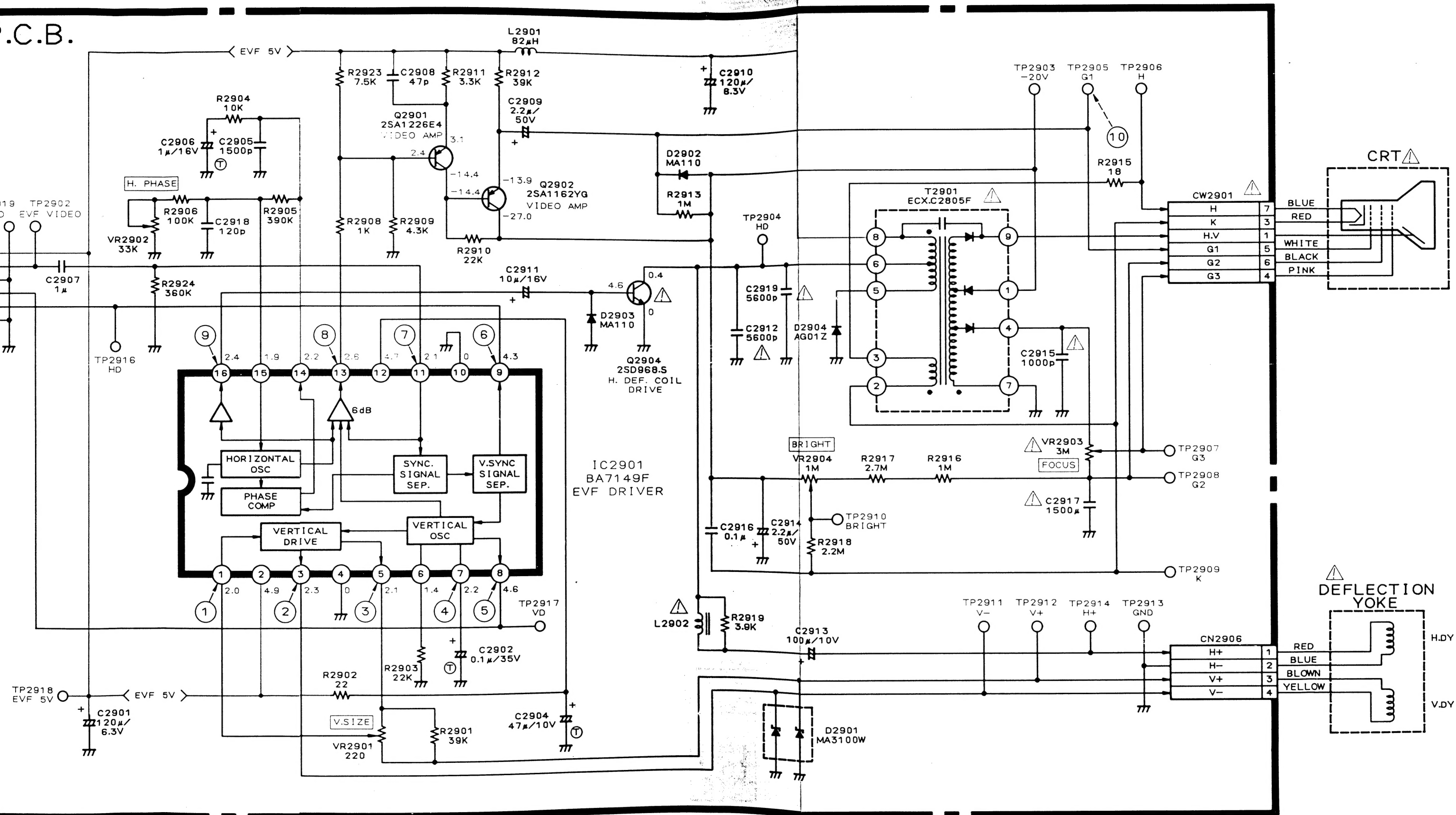
SCHEMATIC DIAGRAM EVF P.C.B.

SIGNAL WAVEFORMS



IC2901

.C.B.



IC2901

Canon